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AMERICAN FRUIT GROWER



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SEPTEMBER

1945

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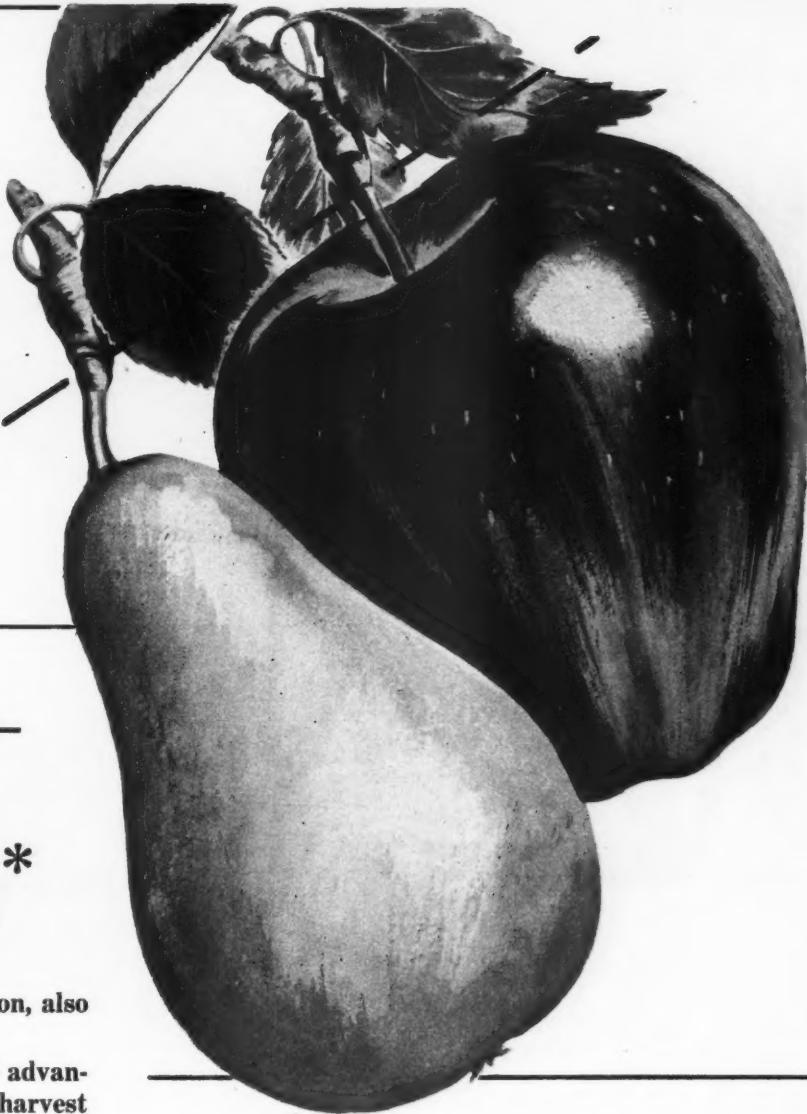
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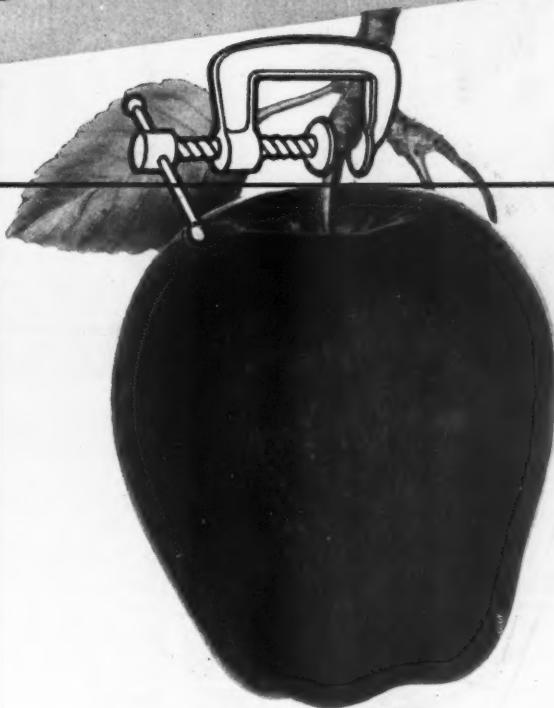
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LETTERS TO THE EDITOR

Taking Out the Backlash

Dear Sir:

Have read the *Fruit Grower* for a long time. It has been a great help and pleasure to me.

Here is a crude drawing on how to take the backlash out of an eight nozzle broom. One stands in the barrel used as a tower with the hose run through the bung of the barrel, or one can cut a hole in the barrel. The stiffness of the hose under pressure will kill most of the backlash from the nozzle. This will help many old growers like myself who are having to hold a gun this year. Goreville, Ill.

C. R. Schney



How often we wonder in the course of a day's work if there is an easier or quicker way to do a particular job. We hope growers will exchange ideas, such as this one, in these columns.—Editor.

More Old Varieties

Dear Sir:

For a number of years I have been trying to get a variety, which in my younger days, we called Greasy-Pippin, though I think it also goes by the name of Sowell. It is a late fall apple, greenish or turning to yellow in color, and has a greasy appearance. It is similar to the Fall-Pippin, but is more round-shaped and very tart.

If any of the readers of *Fruit Grower* could supply me with scions of that variety in the spring, I would appreciate it very much. Some nurseries had that variety listed, but when the trees came to bearing, they were an entirely different variety.

I understand that "cion" is spelled "scion" in Ohio and Washington, D. C. In Michigan, New York and California, it is spelled "cion."

Kalamazoo, Mich.

John Van Zee

Dear Editor:

To my mind, outside of the Grimes Golden and one or two others, none of the newer apples are equal in flavor to our old varieties. Who does not remember the Bellflower, Tulahocken, Winter Rambo, Smith Cider, White Pippin, Early Harvest, Benoni, and the Russets.

I would appreciate any information as to obtaining scions from any of these old varieties of trees.

Covington, Ohio

L. T. Arthur

Gentlemen:

I was pleased to read about the Sheepnose apple as I have been looking for some scions. Do you know where the Porter apple is? I have tried in vain to find a young tree or even some scions to graft.

Manchester, N. H. James D. Filleul

Dear Editor:

Since Mr. Morgan was successful in his sleuthing it encourages me to start a tracer for an apple lost to me these 30 years. It was a lone tree in my aunt's garden. She called it "the little blue apple" because it had over its deep red coat a blue mist like to that on Concord grapes, and was but little larger than a Yate. I do not think it was a Red June for near as I can remember it ripened in May. Perhaps someone out of the *Grower's* thousands of readers may have a line on it too.

So many of the old-time apples have disappeared. I never see them listed in nursery catalogs. Where, oh where have they gone? Gurley, Ala. Mrs. J. M. Burdine

Perhaps the answer to—"Where have the old varieties gone?"—may be found in the statement—"Old varieties and trees belong in sentimental poetry and not in the orchard." Time is the greatest tester of varieties after all. If some of the old favorites have disappeared from commercial plantings and nursery catalogs, it is because they cannot compete with fruit that ripens to a fuller flavor, and handles better in storage and market.

Because a childhood favorite has become obsolete, however, does not make our mouths stop watering for it. . . . The world would be a drab place without sentiment, and these old varieties which awaken thoughts of the past deserve consideration in limited plantings.—Ed.

Asphalt on Tree Wounds

Gentlemen:

In your July number you advise against using roofing asphalt for pruning or tree wounds as it might injure the tree. I question whether the adviser has tried it. I have used roofing asphalt for covering pruning and other tree wounds and have never known it to be injurious in any way.

I prefer asphalt fiber coating; it contains asbestos fiber that helps bind over and maintain a cover on tree wounds, especially large ones. Some who have used asphalt coating without the fiber content have had satisfactory results. It has been my experience that roofing asphalt is longer lasting than commercial pruning compound when used to cover tree wounds. It is also much cheaper. We bought it in one-gallon cans, ready to use. Several different makes gave the same results. One roofing firm informed me that the manufacturer had thoroughly tested their roofing asphalt for use on pruning wounds and found no injury. The Department of Horticulture, University of Nebraska, has, I believe, used and recommended it. I would suggest that orchardists compare it with other tree wound dressings. Cedaredge, Colorado B. H. Asendorf

If Grower Asendorf will read our July recommendation again he will observe that we cautioned growers against the use of roofing paints and creosote. Asphalt is a safe material to use on tree wounds.—Ed.



Why does VIGORO
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PROMISING GRAPE VARIETIES

By RICHARD WELLINGTON

New York Experiment Station



AT Geneva and Fredonia, New York approximately 40,000 grape seedlings have been planted and about 30,000 have fruited. Thirty of the most promising seedlings have been named, that is about one out of every 1000. Of those that were named at least ten have been dropped for various reasons such as lack of hardiness, susceptibility to cracking or diseases and uncertainty in cropping. In this group are included Erie, a very early black, Hudson, a midseason black, and Pontiac a high quality-black, all having reflexed stamens and abortive pollen. Like Brighton and Salem they are dependent upon other varieties with good pollen in order to produce satisfactory crops year in and year out.

Seedless Grapes

Bronx Seedless, a cross between an unnamed seedling and Sultanina produces a very large cluster of red grapes and is of interest due to the large size of its berries but since it is susceptible to mildew and cracking it is recommended only for trial. Stout Seedless, a cross between another seedling and Sultanina rosea, requires favored conditions, as it is subject to winter injury. This variety was named in honor of its producer, Dr. A. B. Stout, of the New York Botanical Gardens. Its fruit ripens in midseason and produces a large cluster of small, oval berries of very good quality. It resembles the Sultanina in ap-

pearance. In areas where climatic conditions are not severe it may become a desirable variety.

Early Black Varieties

Four of the Station's varieties fall into this class. Van Buren was originated by the late F. E. Gladwin by crossing the Fredonia with the Worden and was introduced in 1935. Its fruit ripens about one week before Fredonia and equals the Concord in quality but has a smaller cluster and smaller berries. The skin is more tender than Concord and is, therefore, less desirable for shipping. However, for local and roadside markets it is very desirable and in addition makes a good unfermented juice. The vine is as hardy as Concord and productive but under humid conditions foliage and berries may be attacked by downy mildew.

Fredonia, also originated by Gladwin, was produced by crossing Champion with Lucile. In 1927 the Fredonia was sent out for trial and soon became popular throughout the eastern grape growing areas and as far west as Missouri and as far south as North Carolina. The vine is strong, vigorous, and generally productive. Some complaints have been received in regard to its uncertainty in bearing, especially in the northwest. Possibly this fault may be due to an over vegetative condition that can be corrected by pruning and cultural methods. Again where humidity is high its fruit may be attacked by downy mildew. Its clusters are medium, cylindrical and compact while its berries are large, round, black with a heavy bloom, juicy, solid and good in quality. Due to its early ripening, 2 to 3 weeks before Concord, and its large, showy fruit it has become popular as a table grape. In addition, it makes a good red wine. Regardless of its faults it is rapidly replacing the old standard early varieties, such as Moore Early, Campbell Early and Worden.

Hubbard crossed with Portland gave the Athens and the reciprocal cross the Kendaia. The former was introduced for trial in 1938 and the latter one year later. Both ripen about with Fredonia. Athens has a large, loose cluster and a large oval berry of

good quality. Kendaia has a smaller cluster and berry and a more pronounced flavor. Both varieties are good in quality and are vigorous and productive but have not been sufficiently tested to evaluate their value.

Buffalo and Eden, both black, ripen



Above—Fredonia is popular as a table and wine grape. Below—Westfield was introduced mainly because of its high red pigment content.



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Lutie ripens in midseason and is of good quality.



Golden Muscat are large and high-quality grapes.



Ontario ripens early and has a pleasing flavor.

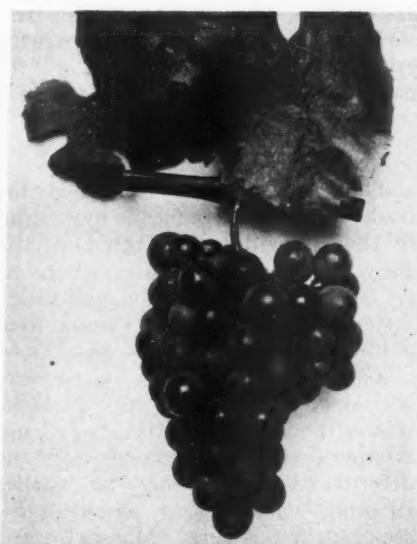
about 10 days before Concord. Buffalo was obtained from a cross between Herbert and Watkins and Eden from a cross between Ontario and a station seedling. Both were introduced in 1938. All grape enthusiasts rank Buffalo as one of the best in quality, while Eden has a more pronounced flavor and a more divided following. The clusters of Eden are often scraggly which is a serious handicap for a commercial grape. Both varieties are vigorous and productive but less hardy than Concord. It is too early to make predictions but the Buffalo, when better known, should gain favor rapidly for its table and wine-making qualities.

Watkins, Westfield and Sheridan, all black varieties, should be mentioned. Watkins due to its scraggly cluster will never be grown commercially but its sweet and pleasing flavor appeals to many grape fanciers. Westfield, a Gladwin production, was introduced mainly because of its high red pigment content. Unfortunately it has not proved desirable for either fermented or unfermented juice and has no merit as a table grape. Sheridan, a Herbert by Worden cross, was produced in 1903 and introduced in 1921. Its vine is vigorous, very productive and bears large, compact clusters of attractive large berries of excellent quality. This variety requires a season about one week longer than that of the Concord. Due to its tough skin, this variety makes a good shipping grape and in addition to its good table and excellent keeping qualities, it makes a good wine. Sometimes its clusters are too compact and splitting may occur. Judging from the favorable reports received from Missouri, North Carolina and the eastern grape areas, Sheridan is becoming an established variety.

Early White Grapes

Ontario, one of the earliest varieties, was produced in 1892 by crossing Winchell with Diamond and although introduced in 1908 it is still little known in many grape growing areas. Its fruit ripens early and has a pleasing flavor. Wine-makers in Ohio have found it desirable for making champagne. Ontario is too tender for shipping but desirable for the home and local markets. Like other early varieties it is subject to bird injury and may require protection by paper bags or other covering. As a parent Ontario has been very satisfactory as it transmits earliness and good quality to its seedlings. Portland, a cross between Champion and Lutie, made in 1901 was named in 1914. Its vine is hardy, vigorous and productive and its fruit resembles Niagara in appearance but ripens three weeks earlier. When over ripe it becomes foxy in flavor and deteriorates rapidly.

(Continued on page 30)



Hanover produces clusters above medium in size.

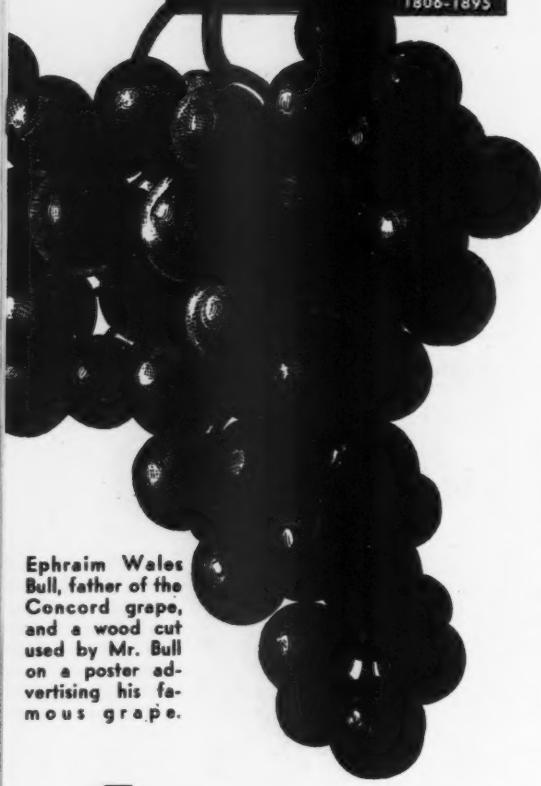
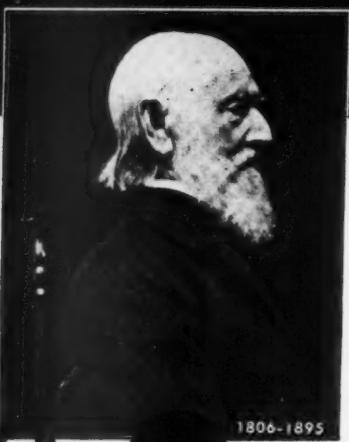


Urbana variety requires a long season to ripen.

Dunkirk has good dessert and wine qualities.

EPHRAIM BULL AND THE CONCORD GRAPE

By WILLIAM J. BURTSCHER



Ephraim Wales Bull, father of the Concord grape, and a wood cut used by Mr. Bull on a poster advertising his famous grape.

THE CONCORD GRAPE leads all American varieties as a vineyard and arbor favorite. It is known to more people than any other grape. Yet, and strangely, too, very little is known about the man nature chose as the benefactor to fruit lovers through whom this grape should be discovered and named the Concord.

He was Ephraim Bull, born March 4, 1806, the day Thomas Jefferson was inaugurated for his second term as president. He was the eldest son of Epaphous Bull, a silversmith, of Bull's Pastures, now Bullsville, New York—a descendent by successive generations from Captain Thomas Bull, who came to America in 1635 on the ship *Hopewell*.

There were five other children. Albert, displeased with the family name Ephraim would make famous, legally changed his to Lawrence. John, a

seaman, became captain of a ship, in 1849 was sent to California to trade in hides and tallow, arrived as gold was discovered, his crew deserted for the mines, was two years getting another, sailed home to Boston, then returned to California, himself went into the mines, and in striking contrast to Ephraim's luck found a fortune. Elizabeth, unmarried, lived with Ephraim, and is said to have caused the breaking up of his home.

In early youth Ephraim was apprenticed to Louis Lauriat, Boston gold-beater, for whom he worked some years, then being employed by another gold-beater in Dorchester, whom he succeeded in business in 1826. In this trade he hammered gold into thin strips, the market for which was mostly with gilders and bookbinders.

September 10th of that year he married Miss Mary Ellen Walker, a relative of President Walker, of Harvard. Coincidentally, as a mark of sentimental fitness, September 10 was the day the first cluster of Concord grapes was picked, and, as if officially established, is in many districts the date for Concord ripening.

Mr. and Mrs. Bull after a while moved to Boston, where Mr. Bull manufactured and sold gold leaf. Nearly a decade later he showed symptoms of lung trouble, and upon advice of his physician to leave Boston, moved to Concord in August 1836.

There he bought a house—now "Grapevine Cottage"—on Lexington Road, so rich in historical and literary associations—the very spot for the start of the cosmopolitan American grape, that would, by right of its nativity, be entitled to bear the historical name of Concord.

Took Six Years of Nursing

Though Mr. Bull continued his trade, he loved farming the more, and in 1841 bought from Eben Dow the farm adjoining his house, where he set out many trees, shrubs, and vines. After that he was more farmer than gold-beater.

The grape constituted his passion, and since the Catawba and Isabella, which he was cultivating, were unreliable even in favorable seasons, he determined to develop an earlier ripening variety that would withstand the severe Massachusetts weather.

The very grape Mr. Bull had in mind, by the mysterious way in which nature works to accomplish things, volunteered itself in due time right in his pathway.

It was from the seed of the vigorous-growing wild Fox grape—abounding in New England and the northeastern section of North America—likely dropped by a bird, that there sprang up by a wall in his garden a vine that bore a grape with a different and decidedly delicious taste and flavor. The year was 1843.

These are Mr. Bull's own words regarding his experiment: "I put these grapes, whole, into the ground, skin and all, at a depth of two inches, about the first of October, after they had thoroughly ripened, and covered the row with boards. I nursed these seedlings for six years, and of this large number one only proved worth the saving. On the 10th of September, 1849, I was enabled to pick a bunch of grapes, and when I showed them to a neighbor, he at once exclaimed: 'Why, this is better than the Isabella!'"

In 1852, after three years of testing, the new grape was exhibited before the Massachusetts Horticultural Society as a seedling from a native grape. It was named the Concord.

In 1854, C. M. Hovey & Co. of Boston put the Concord on the market. The sales for the year amounted to \$3,200. The next few years found the Concord in the catalog of every nursery in the country.

Tried to do Better

The success of the Concord encouraged Mr. Bull in further experiments, his goal being an improvement on the Concord itself. Year after year he planted many seeds, now and then culling one to which he would give every special attention. Over a period of 37 years he planted more than 22,000 seeds, and developed 21 varieties of grapes. At one time he had 125 vines which he thought worth saving, but growing more critical with each new success he discarded most of them. At least four of his new grapes were named. They ripened, earlier than Concord, but otherwise fell short of Concord's extraordinary qualities, though Mr. Bull himself did think that one of them was better.

One of the new grapes was named
(Continued on page 24)

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KEEPING VINES VIGOROUS

BY I. W. WANDER

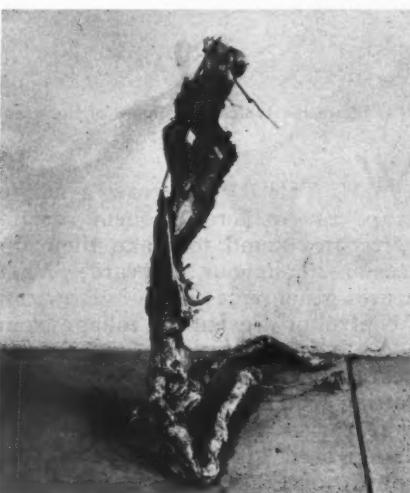
OHIO EXPERIMENT STATION

It is well known that profit declines with the decline in yield because the cost of production per acre remains nearly the same. Substantially more profit will be realized in picking 4 to 6 tons of Concordes per acre than can be made when 4 acres are required to produce the same number of grapes.

It is of primary importance to place the vineyard on a good site. Unfavorable sites, for example where frost damage is likely to occur or where the soil has poor drainage, place the grower at a great disadvantage because no cultural, fertilizer or spray program will overcome such handicaps. Often good sites are on rolling or hill land and in these cases the contour system of planting is desirable to prevent erosion. Even on gently sloping land, if the rows run up and down the slope, the accumulative effect of soil and water loss over the period of time a vineyard occupies the land will be quite large. Continued loss of soil and water will naturally result in less thrifty and productive vines.

In making a study of the chemical and physical changes in Northern

(Continued on page 32)



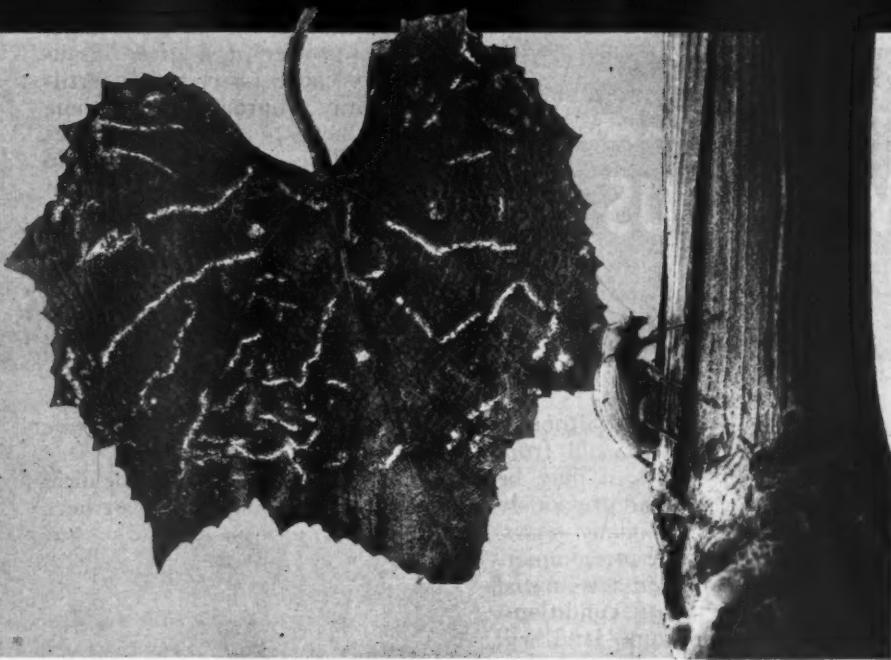
Above—Vine showing the damaging effect of deep cultivation along each side of the row.



Left—A wheat cover crop helps maintain better organic matter content in the soil. Right—In the initial step in turning under the rye cover crop, the soil is turned toward the vines.

INSECTS AND DISEASES OF THE GRAPE

By ELDON BANTA



At left is shown the typical leaf injury of the grape root worm; at right is the adult beetle.

WHETHER you grow a single grape vine or acres of them, certain pests are bound to make their intrusion upon your vineyard. What causes grape vines to die? How can I control or prevent the foliage from speckling and turning rusty in appearance? What causes wormy and rotting fruit? These and other questions arise when a new and inexperienced grower engages in the culture of grapes, and their importance is never overlooked or underestimated by the experienced grower.

A heavy-laden vine or vineyard frequently brings disappointment to the amateur when he finds the developing and ripening berries infested with little brown worms. To the experienced grape culturist these are known as the larva of the *Grape Berry Moth*, the most notorious enemy of the American type of grape grown east of the Rocky Mountains. It is not a serious pest of the European or *Vinifera* species of grape. Infested berries color prematurely and may crack open or shrivel and drop from the bunch.

The slender, yellowish or pale green little insects, some with red and yellow markings, which jump from the under sides of the leaves when disturbed, cause the rusty and

speckled appearance of the foliage. These insects, *Leafhoppers*, injure the plant by sucking the sap from the under side of the leaves. They are common to both the American and European types of grapes, and greatly reduce the vigor of the vine when abundant.

Frequently vines may become weak, make little growth and have sickly looking foliage with no apparent cause. Such a condition may be due to a small, curved, brown-headed white grub feeding on the fine hair-roots and channeling the bark of larger roots. This little grub is the larva of the *Grape Root Worm*. The adult insect is a grayish-brown, chunky beetle about $\frac{1}{4}$ inch long which may be found feeding on grape leaves, making chain-like markings on the upper surface. They may be found feeding throughout the summer, but do less injury than the grubs feeding on the roots.

The *Rose Chafer*, a more or less troublesome pest of roses and some fruits, sometimes attacks the grape. The long-legged, grayish-brown adult beetles of about $\frac{1}{2}$ inch in length, may be found feeding upon the blossoms in early spring. Later they may feed upon the newly set grapes and if abundant will even riddle the leaves.

It is not usually a serious pest of grapes in the United States.

The *Vinifera* grapes of the Pacific coast are highly susceptible to attacks of the *Grape Phylloxera*, an aphid. In fact it is the most serious pest of this type of grape. In eastern states, the chief mark of identification is the small gall, or "swelling" which it causes to develop on the upper leaf surface. On the lower side of the leaf the gall is open and inside may be seen the small, yellowish, wingless aphids. This is one reason why *Vinifera* grapes cannot be grown successfully in eastern United States. The aphids do not attack the American grapes. These leaf galls are rarely found in California. Here the phylloxera attacks the roots mainly, forming galls on the young roots thus giving them a characteristic contorted appearance and checking their growth. They may also be found on the larger roots where they interfere with root activity and growth. The foliage of such plants appears pale and sickly, growth lacks vigor and later the vines may die completely.

The phylloxera cannot be controlled by the recommended spray program printed with this article. The only practical control as yet devised is to plant grape varieties which are grafted on phylloxera-resistant rootstocks. Certain species of the American grape are resistant and are therefore used for this purpose. Western grape propagators can now offer such phylloxera-resistant plants to prospective grape growers.

Of course, the best control is to plant the vineyard where no grapes have been grown and consequently no phylloxera are present in the soil. This is not always possible with the available land constantly diminishing. The grafted, resistant rootstocks have not produced as high a quality of grape as those grown on their own rootstocks in noninfested soils.

Diseases

Along with wormy grapes, the rotting of the fruit plagues the grape grower. *Grape Rot*, or *Black Rot*, as it is called, is caused by a fungus which really makes its first appearance in the spring on the foliage as light brown spots on the leaves. Later in the season these spots possess gray centers with small black dots. If weather conditions are favorable, that is, warm and damp, or rainy, during the early summer months, the fungus spreads to the young fruits. Infested berries later begin to rot, shrivel, turn black and become covered with black dots like those on the leaves. Even the amateur will have no difficulty in identifying this disease, the most serious on American varieties. It is upon

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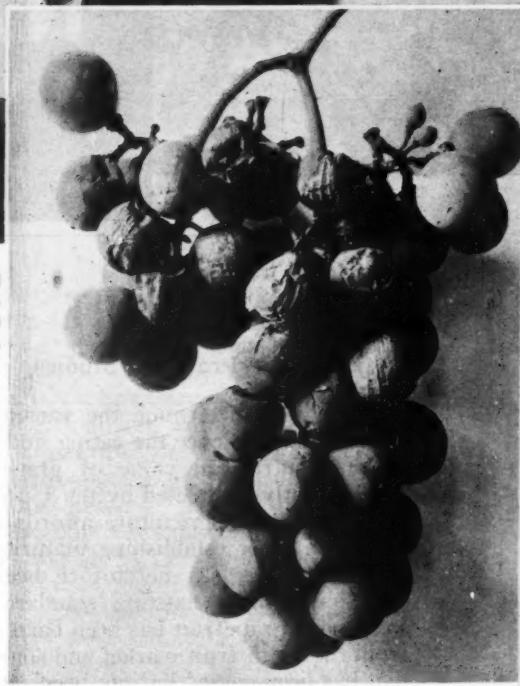
A male adult grape leafhopper (left) and a female adult, greatly magnified; the insect is about one-eighth inch long.



The Concord grape leaf on the left has been severely injured by grape leafhoppers. Leaf at right is uninjured.



Above—Mature berries which show shriveling due to berry worm injury late in the season. Right—Black rot on grapes caused by fungus which first appears in the spring on the foliage.



GRAPE SPRAYING SCHEDULE

Application	*Materials to make 100 gallon of spray	To control	Explanations
1. When shoots are 4 to 5 inches long	Bordeaux, 8-8-100. Lead or calcium arsenate, 3 pounds plus 3 quarts of summer oil.	Black-rot Downy mildew Berry moth and Dead arm	Applications 1 and 2 are usually very important for rot control in seasons when it develops in epidemic form. They should be made every year as insurance against rot
2. Just as the blossom buds are opening	Same as above	Black-rot Berry moth Downy mildew and Rose chafer	If rose chafer is present, use 5 pounds lead arsenate and perhaps a gallon of cheap molasses. This is a critical application for the control of berry moth
3. Immediately after fruit sets	Same as above plus 1 pint of nicotine sulfate 40%	Black-rot Downy mildew Berry moth Rose chafer	This application is necessary for berry moth control
4. Two weeks after full bloom	Bordeaux, 8-8-100. Lead or calcium arsenate, 3 pounds plus 3 quarts of summer oil plus 1 pint nicotine sulfate 40% or 3 pounds fixed nicotine (14%) plus 1/2 pound rosin fish oil soap plus 3 pounds proprietary copper compound.	Black-rot Downy mildew Leafhopper Berry moth and Rose chafer	If rose chafer is very bad or berry moth very plentiful, make this application four days earlier Better leafhopper control follows inclusion of fixed nicotine in this spray
5. About the time the berries begin to touch	Fixed nicotine (14%) 3 pounds plus 1/2 pound rosin fish oil soap, 3 pounds proprietary copper compound	Black-rot Downy mildew Leafhopper Berry moth	
6. Time determined by observations. Usually around August 15	Fixed nicotine (14%) 3 pounds plus 1/2 pound of rosin fish oil soap	Berry moth	Particularly valuable in heavily infested vineyards

Add materials to tank in order given.

the control of this disease that the spray program accompanying this article is largely based.

Occasionally grape leaves show a white, downy discoloration on the under sides with yellowish areas opposite on the upper surface. This is caused by the fungus known as *Downy Mildew*. Young shoots sometimes become covered with the downy growth of this fungus.

This is by no means a complete coverage of grape pests. There are many more than discussed here, but these are the most important ones. Furthermore, if a spray program is followed, many diseases and insects will be controlled in addition to those for which the spray is specifically applied.

Control Measures

Proper timing of applications and
(Continued on page 31)



NATIONWIDE FRUITS

GRAPEFRUIT

Grapefruit Problems Studied

A study to determine the various factors that influence the eating quality and nutritional value of grapefruit recently completed by the U. S. Department of Agriculture affords a better basis for establishing maturity standards than has heretofore been available. Under existing standards some good grapefruit has been barred from the fresh fruit market and some that has been passed has not been satisfactory to consumers.

The natural changes in the fruit as it ripens on the tree are the result of changes in physical and chemical properties which for the most part cease when the fruit is picked. Hence to have good quality grapefruit it must be of good quality at the time of harvest and a suitable standard must be used to gauge maturity.

The chief trouble in getting good grapefruit has been in the early part of the season when the fruit barely meets the legal established requirements for maturity in Florida. These are based on the ratio of the content of soluble solids (mostly sugars) to the acid in the fruit, together with a certain juice volume. The same standard is applied to all types and varieties of grapefruit. The results of the study show that in order to guarantee acceptable grapefruit to the consumer a dual standard is needed, one for varieties like the Marsh, which are seedless, and another for the seedy

kinds like the Duncan.

Horticulturists have carried on extensive studies of the seedless and seedy types in the Florida area and a report has just been printed. For four years periodic analyses were made of more than 15,000 individual fruits. These analyses were begun before the fruit was edible and continued as long as any would hang onto the tree. Different varieties of these types, grown on different rootstocks and on different soils, were used and also fruits grown under different cultural practices.

The report has information for growers and handlers of grapefruit in Texas, Arizona, and California as well as in Florida. It is published as Technical Bulletin 886, *Seasonal Changes in Florida Grapefruit*. It is for sale at 25 cents a copy by the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

CURRENTS

Spraying Currant Bushes

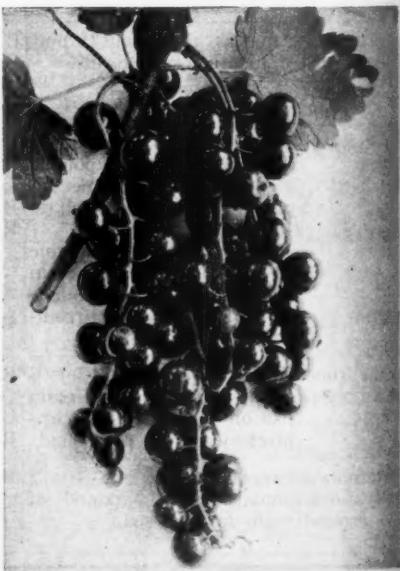
Sprays to check the leaf spot diseases which tend to weaken currant and gooseberry bushes and to control the destructive powdery mildew disease of gooseberries have been developed in experiments carried on by plant disease specialists at the State Experiment Station at Geneva, New York. Correct timing of the spray applications is of prime importance.

During August and September, leaf spot diseases may result in defoliation

of the bushes. This weakens the bushes so that the fruit buds do not develop normally and after a few years the bushes become stunted and die. Experiments show that two applications of a bordeaux spray containing 3 pounds of copper sulfate and 3 pounds of hydrated lime in 100 gallons of water applied three weeks after bloom and again after the fruit has been picked will protect currant leaves against leaf spot. Details on the control of currant leaf spot are given in Bulletin No. 709 now available upon request to the New York Experiment Station.

Powdery mildew disease of gooseberries causes brown, felt-like patches of mildew on the fruit which renders

Page 16 American Fruit Grower September, 1943



it unsalable. Leaf spot diseases also defoliate gooseberry bushes in the same way that they do currants if the bushes are left untreated.

Powdery mildew on gooseberries can be controlled by spraying immediately after bloom with a lime-sulfur 1-50 spray. Spraying after the mildew appears will not give satisfactory control. After the fruit is picked, the bushes should be sprayed with bordeaux mixture for control of the leaf spot diseases. Five pounds of lime, instead of 3 pounds as in the case of the bordeaux spray for currants, should be used in the mixture sprayed on gooseberries to reduce the danger of copper injury to the leaves.

PEARS

Harvest Sprays on Bartletts

With a series of observations beginning in 1940, F. W. Allen and A. E. Davey of the California Experiment Station, have been studying the effect of harvest sprays upon the keeping quality of Bartlett pears. From their observations, they have concluded that watery breakdown occurs in over-mature Bartlett pears from both sprayed and unsprayed trees, and is also caused by delayed and prolonged storage.

Growers have found harvest sprays extremely effective in reducing premature dropping of fruit, but they are advised to use these sprays with caution. The two California pomologists say that harvest sprays should not be used to extend the normal picking season.

In the fruit from the Sacramento River and Santa Clara Valley, watery breakdown was more severe in pears from sprayed trees than in those from unsprayed trees. This was partly because of the harvesting of certain pears which had dropped from the un-

sprayed trees, while the fruit from the sprayed trees was allowed to hang longer on the trees and become more mature. Also, the relatively early sprayings seemed to hasten the ripening of the later pickings.

Had harvest been completed in some orchards 10 days to 2 weeks earlier, little breakdown would have occurred, nor would little breakdown have occurred had the fruits been placed under adequate refrigeration with less delay.

In numerous lots ripened at the cannery, more rapid ripening and greater loss from breakdown in sprayed pears was noted; but when samples were cut, no differences in processing the sprayed and unsprayed fruit was evident.

PLUMS

Leafhoppers Damage Plum Trees

Plum growers soon may find one of their most pressing problems solved as the result of experimental detective work on the part of T. A. Merrill, extension and research horticultural specialist at Michigan State College.

For some time Dr. Merrill has been carrying out experiments to learn what may be causing severe foliage wilting and the dwarfing of several varieties of plum trees in Michigan State. So serious has been the affliction that the trees seldom set sufficient fruit to make a paying crop. Now it seems, as a result of Dr. Merrill's tests, that the common leafhopper is the troublemaker.

While carrying on fertilization and soil nutrient trials in Allegan county orchards, the college specialist used cloth bags covered with DDT spray to protect several branches on each of the trees. He was surprised to note that the leaves remained in excellent condition, while those on other por-

tions of the trees continued the withering process. He concluded that the bags protected the leaves from the leafhopper.

During the next year or more, experiments are to be continued by the Agricultural Experiment Station staff at the college on an expanded basis to verify the conclusions so far reached. Spray formulas that can be recommended for the control of the insects will be worked out.

V. R. Gardner, director of the experiment station, explains that the leafhopper is by no means a new plum tree insect pest. However, he points out that until now it had not been realized that the insect caused any great damage during normal seasons. Dr. Merrill's experiments seem to indicate, according to Mr. Gardner, that a few hoppers can be very poisonous to the trees.

CHERRIES

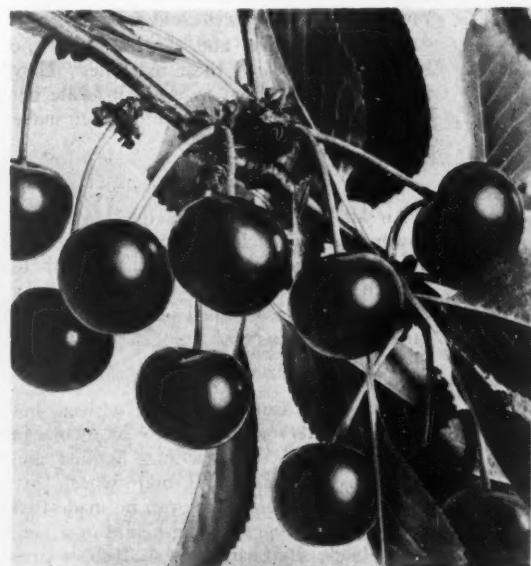
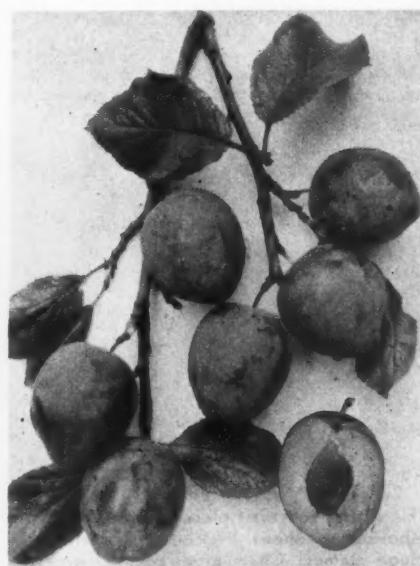
Pruning Mature Cherry Trees

Homer F. Lee, a successful cherry grower of Yakima, Washington, prunes his mature cherry trees, and has given the members of the Washington State Horticultural Association an account of the results.

Lee, says, "Many have never considered it necessary to prune the bearing cherry tree, while others thought that to prune was to injure the tree. There seems to be a growing interest in this phase of pruning and we find today fine examples of work on old bearing cherry trees . . .

"During the labor shortage the past few years many have asked if mature cherry trees should be pruned back to lower them. Yes, by all means, as they will become practically worthless if they are not. I say they should not get beyond a practical height to pick. I would say, too, that 20 to 25 feet

(Continued on page 34)



HOMEMADE POWER CUTTERS FOR WEEDS AND GRASS

By R. I. SHAWL

University of Illinois



HE DOES NOT WAIT... HE WELDS!

Speedy repair or building of orchard implements by arc welding may save you half a day—or an entire crop, and also the expense of replacement parts.

Grass and weeds are frequently troublesome pests beneath and around the trees in orchards. It is expensive and time-consuming to cut them by hand, and consequently the job seldom gets done. The homemade power cutters described in this article, which is reproduced from a University of Illinois circular, have a place in orchard mowing. They are easily made, inexpensive and labor saving, particularly in mowing the weeds under trees. For information and prices on welders suitable for farm work write The Editor, AMERICAN FRUIT GROWER.

The weed and grass cutters described here were built and exhibited by farmers at the labor-saving shows held in 1944-45 by the Extension Service in Agriculture and Home Economics of the University of Illinois.

The machines can be made from parts that every farmer can readily find. When properly built these machines do a satisfactory job of cutting weeds and grass.

The photographs and sketches give the essential features of these machines. They have not been drawn to uniform scale because that is not necessary in order to make their construction clear.

Engine

An air-cooled engine having $1\frac{1}{2}$ horsepower and a variable speed governor supplies a very satisfactory power for a 20- to 24-inch blade or a 30-inch cutter bar. Use a 2-inch or a 3-inch V-belt pulley on the engine.

Wheels

The wheels can be any size desired, but rubber or steel wheels 15 to 20 inches in diameter make the machines lighter and more easily handled. If high wheels are used, an adjustable frame can be made that will give the proper cutting height or a long cutter-blade shaft can be used. Rubber tires are especially desirable on rough ground.

Mower Type of Cutter

For mowing weeds in fencerows, the mower type of cutter is probably more satisfactory than the rotating type. This is especially true if the cutter bar is made to extend out past the right wheel.

When cutting heavy wet grass, the cutter bar may clog. That is one reason why the rotating type may be the best one to build if much of this kind of work is to be done.

Under most conditions the mower type of cutter can be easily pushed along the ground without digging into it.

Making a Cutter Bar

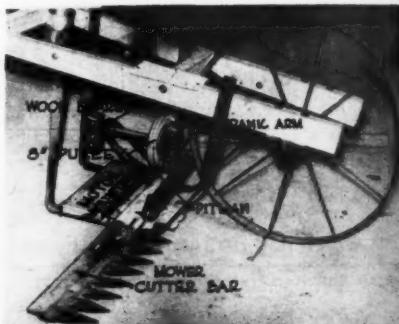
A cutter bar from a combine can be used for this machine. Or if a heavy bar is desired, the inside 2 feet from the cutter bar of a mower can be used (Figs. 1 and 3). To reduce its weight, part of the back of the heavy cutter bar can be cut off with an acetylene torch.

To make a complete cutter bar, start with a piece of flat iron about $\frac{1}{2}$ inch thick and $1\frac{1}{2}$ inches wide. Cut a piece 30 inches long. Bolt to this bar the guards wearing plates and clips (Fig. 6).

It is best to use guards spaced $1\frac{1}{2}$ or 2 inches apart. At this distance they will do a cleaner job than if spaced 3 inches apart, and they will not vibrate as much. (On newer farm mowers the guards are spaced $1\frac{1}{2}$ inches apart for use with the regular mower sickle.)

A regular 6-foot sickle will make two 30-inch sickles for the weed mower. A shaft speed of 350 to 425 r.p.m. (revolutions per minute) gives satisfactory cutting. An 8-inch to 12-inch pulley on the pitman drive will give the desired speed.

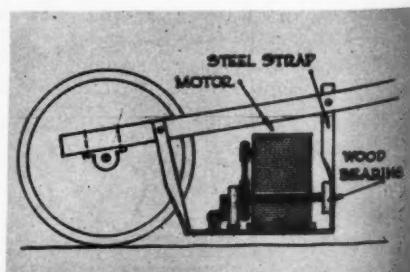
Page 18 American Fruit Grower September, 1945



1. A wheelbarrow side-mounted cutter-bar mower with underslung mounting of parts. A 2-foot length of mower cutter bar, with the ends of the shoe cut off, is bolted to the platform. The sickle is driven with a short pitman rod by means of a crank arm and shaft mounted in two wooden bearings. An 8-inch to 12-inch pulley gives the right speed.



This cutter took first place in the 1944 Illinois labor-saving shows. It is being driven by Hugh James, Champaign county, who designed it. It mows both weeds and grass.



2. Side view of Fig. 1 showing mounting of motor and crank assembly. It is best to use adjustable straps.



3. Top view of Fig. 1 showing the mower, sickle, pitman, and crank-drive assembly. The 3-inch stroke of the standard mower sickle may cause too much vibration if the sickle is not operated at the correct speed. To lighten the cutter bar, cut 2 or 3 inches from the back of the bar with an acetylene torch.

Making the Drive Slot for the Crank Arm

The construction of a drive slot when a crank arm is to be used for the sickle drive is illustrated in Figures 7 to 11.

Take a piece of $\frac{3}{4}$ -inch angle iron and weld it to a flat strap. Then fasten the strap to the top of the sickle with 4 rivets. The side pieces forming the slot must be strengthened as shown in Figure 9.

If the drive shaft is to extend straight back, the slot must be about $7\frac{1}{4}$ inches high. This height is necessary in order to let the 10-inch drive pulley clear the ground.

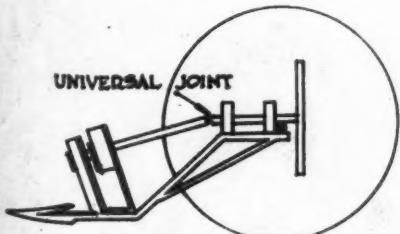
If a universal joint is used in the drive shaft, the slot can be shortened and set at an angle (Figure 10). The pulley shaft can then be mounted in a horizontal position and placed high enough for pulley clearance.

A simple way to build a slotted drive for the sickle is to mount the crankshaft drive in a vertical position (Figure 11). To prevent clogging or wrapping, place a shield around the drive.

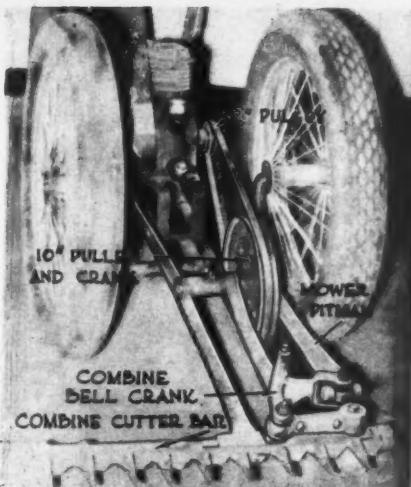
A hardened roller from a corn-planter clutch can be used on the end of the crank arm to drive the sickle slot. A crank arm can be made by welding a short piece of shaft of the right diameter along the side or the main drive shaft.

By taking off the crank drive and cutter bar and substituting a vertical shaft and cutter blade, the machine can be converted into a rotating type of cutter.

The mower type, which has been described here, is the accepted type of grass and weed cutter. However, it has been receiving competition from a radical departure in design by Illinois growers who developed a rotating type of cutter. The rotating cutter, which has some advantages over the cutter-bar type, such as being a much lighter machine and also much easier to handle, will be described and illustrated in a later issue of AMERICAN FRUIT GROWER.



10. A shorter slotted drive can be used. It must be mounted at an angle and a universal joint inserted in the drive shaft to bring the pulley-driven shaft into a horizontal position.



4. Mower with center-mounted cutter bar, heavy construction. A combine cutter bar, sickle, drive link, bell crank, pitman and V-belt pulley are used. The 30-inch cutter bar is extended past the right wheel to allow mowing under fence rows. The mower should cut ahead of both wheels.

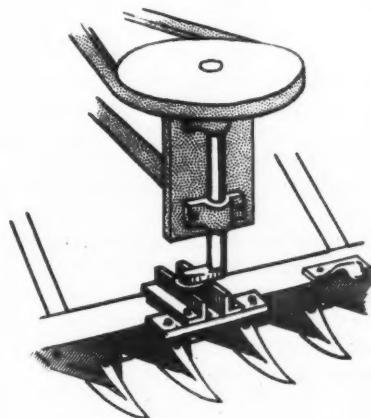
Three Kinds of Sickle Drives

There are three ways to make a drive for the mower type of cutter-bar sickle.

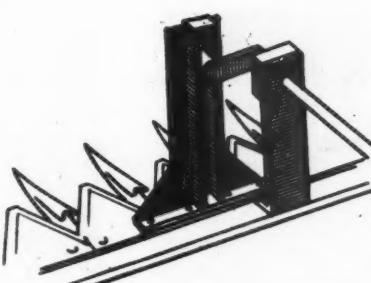
1. Use a crank arm and shortened pitman rod (Figures 1, 2 and 3).

2. Use combine parts, such as the bell crank, connecting link, pitman, and V-belt drive pulley (Figures 4 and 5).

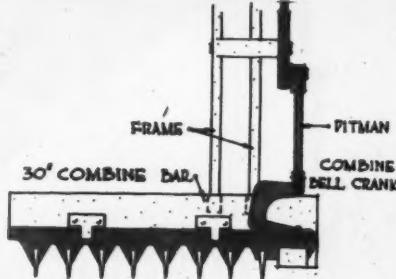
3. Use a crank arm in a slotted drive (Figures 7 to 11).



11. A vertical shaft and crank that drives the sickle through a horizontal slot is simpler to construct. This machine can be changed to a revolving cutter by substituting a vertical shaft and cutter-blade for the parts shown.



9. The construction and mounting of the drive slot is more clearly shown in this drawing. A hardened roller from the drive clutch of a corn-planter plate shaft can be used in the slotted drive.

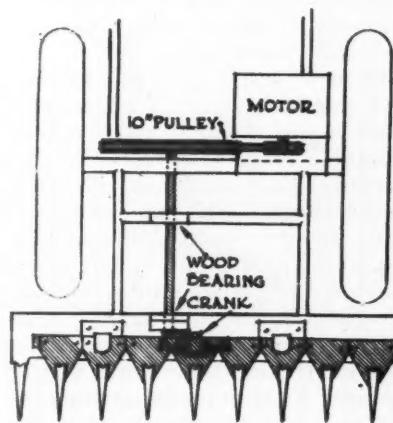


5. Top view of the machine shown in Fig. 4. The frame bars are bolted to the cutter bar. A cutter bar with the guards spaced $1\frac{1}{2}$, 2, or $2\frac{1}{2}$ inches apart and with a stroke of the same length gives better cutting and less vibration than when the guards are spaced 3 inches apart. The guards on a mower cutter bar are often spaced $1\frac{1}{2}$ inches apart for use with a standard sickle.

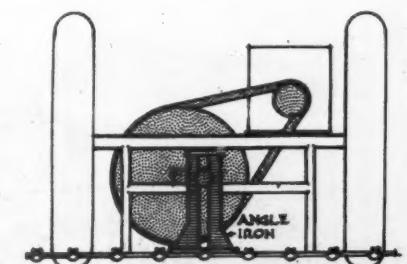
HEAVY IRON BAR



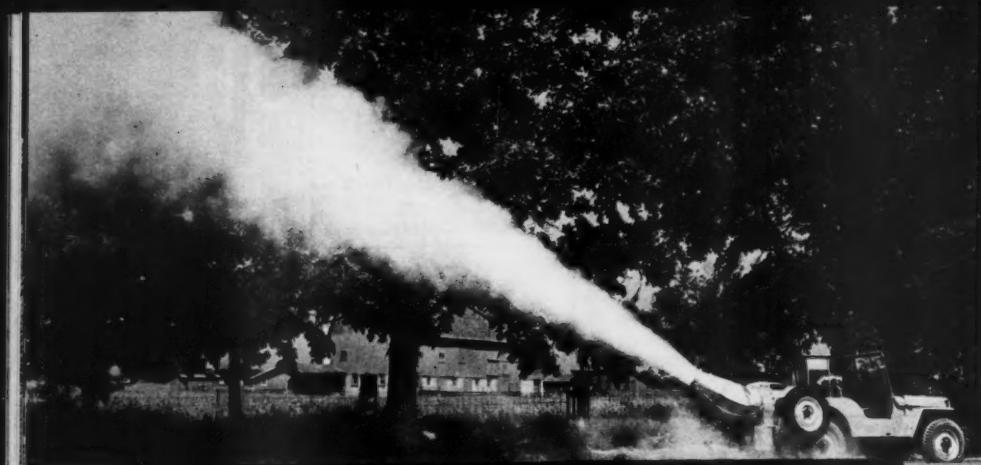
6. A lightweight but durable cutter bar can be built by mounting the guards (spaced $1\frac{1}{2}$ or 2 inches apart) on a piece of flat iron about $\frac{1}{2}$ inch by $1\frac{1}{2}$ inches wide. The flat iron carries the back thrust of the sickle and must be high enough to hold the sickle level on the guards when the clips are properly adjusted. This type of bar should be about 30 inches long. The regular combine or mower sickle can be cut into proper lengths.



7. Top view of a simple and easily constructed center-cut mower with a slotted sickle drive. A straight shaft with a crank on one end is mounted on the frame to drive the sickle by means of a vertical drive slot. The sickle can be driven from the center or the end.



8. Front view of Fig. 7 showing the drive construction. The vertical drive slot is made from $\frac{3}{4}$ -inch angle iron welded to a flat strap which is riveted to the sickle. A reinforcing piece is welded to each side of the slot frame. The slot is made high enough to allow direct driving with a straight shaft.



A new turbine-duster driven from Jeep power take-off.

The military Jeep has probably been the most popularized machine of the war. Whether the civilian Jeep will be accepted with equal enthusiasm will depend upon its economy of operation, adaptability to the purposes for which it is designed, and its initial cost. A place in agriculture and fruit growing for the Jeep seems to be assured.

Page 20 American Fruit Grower September, 1945

FROM THE ARMED FORCES TO THE FARM FORCES

By GILBERT MEISTER

FRUIT growers have long been acquainted with hybrids in plants, but here is something new, a mechanical hybrid! The new farm Jeep of Willys-Overland Motors is packed full of new ideas and uses for the farm and orchard. It combines the four basic functions of the tractor, light truck, mobile power unit and passenger conveyance.

Though designed after the military Jeep, the civilian Jeep possesses some changes which make it more adaptable to farm operations. The civilian model develops 30 horsepower on the belt, sufficient to do many of the farm belt jobs. Its weight is 2600 pounds, or 170 pounds heavier than the military model. Weight is to its advantage in draw-bar work. The Grange League Federation, Ithaca, New York, in their research found it could satisfactorily pull one 16-inch or one 18-inch plow,

but used more gas than a tractor of comparable power. The Jeep did the job faster, however. In most operations, tests have pointed to more speedy accomplishments than with tractors of comparable size.

The farm Jeep can find a place in orchards in helping to do certain jobs. It has possibilities in pulling wagons and trailers for gathering in fruit, hauling supplies and other general hauling work about the farm and orchard. It may be used to pull a small sprayer driven by the power take-off on the Jeep. In removing trees from the orchard, it can be used to buzz the trees into wood in a hurry.

For the small orchardist, the Jeep may be used as an all-purpose mobile power unit, and for the larger grower, it could become an extra power unit used to supplement the tractor in various operations.



The new Jeep can be used effectively to operate a tree spraying unit. Its low silhouette and mobility make it particularly useful in orchard work.



The Postwar Jeep with its power take-off does a quick and efficient job buzzing wood. Its four-wheel drive and mobility carry power to the job.



Here the postwar Jeep is shown pulling a seven-inch tandem disc harrow. Among the many and various farm applications of this modern vehicle are: disking, mowing, raking, threshing, baling, shelling and grinding corn.



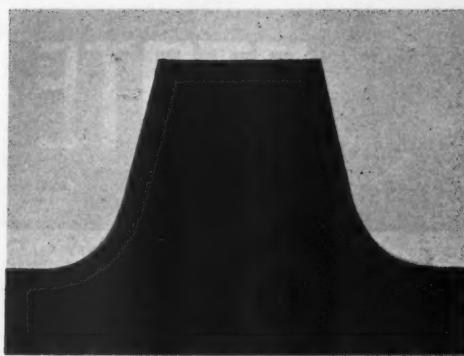
The Jeep, especially adapted for peacetime work, combines four functions of tractor, light truck, mobile power unit, and passenger conveyance. This Jeep is operating a two-bottom 18-inch plow.

In war or peace
B.F. Goodrich
FIRST IN RUBBER

PAIRED
CLEATS



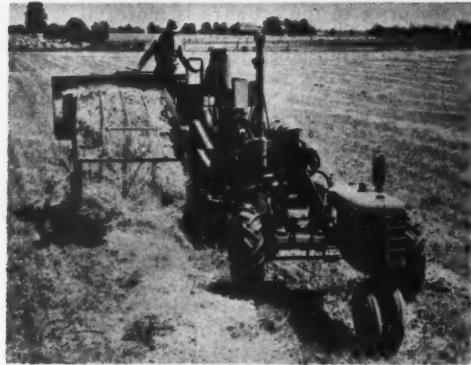
Cleats in pairs . . .



Can't tear loose . . .



No mud catchers . . .



Full traction . . .

Facts about tractor tire traction

HUNDREDS of different tread designs have been tried out and tested by B. F. Goodrich engineers in order to learn more about traction so that they could give you the best traction available.

The tread design used on B. F. Goodrich tractor tires is the *one* design which the engineers found best under *all* types of working conditions. Here are some of the reasons why:

Cleats are arranged in pairs. One is long and one is short. They give a continuous, overlapping grip on the soil. You get full traction, a steady pull. Slippage is lessened. Work is done faster.

The best height for the cleats is determined to the hundredth of an inch.

If cleats are too high they are apt to bend, reduce traction. They may even chip or break off. Low cleats cut down on traction. Each cleat in a B. F. Goodrich tire is shaped like a pyramid, reinforced at the base so it won't tear loose.

There are no mud-catching pockets in B. F. Goodrich tires. The tread has an open center. It's self-cleaning. Because of this open design, the tire tread is flexible. It gives as it rolls. Mud and trash drop out.

All this adds up to extra traction — added bite, grip, and pull to handle the hardest jobs with big savings on time and fuel. For any tractor or implement tire need, see the B. F. Goodrich man next time you are in town.

Write for Farmer's Handbook—If you did not receive a copy of the 1945 Farmer's Handbook and Almanac send us your name and address for a free copy. This book contains 68 pages of helpful information on tractor tires, care of farm machinery, use of liquid weights in tractor tires, handyman hints, how to use concrete on the farm, painting information, gestation table, facts on silos and silage, and much other money-saving information. Address Dept. 228, *The B. F. Goodrich Company, Akron, Ohio.*

B. F. Goodrich
Farm Service Tires

STATE NEWS

OREGON—Renewed interest in strawberry growing in Oregon is indicated by the 175 acres of the Marshall strawberry planting stock which has been entered for field inspections and strawberry plant certification this year. If all fields could pass inspections which are rigid, there would be in prospect about 18 million certified plants. Strawberry "yellows," a serious virus disease, must be combatted at all times in the case of the Marshall variety. Once a plant contracts the disease, it never recovers, but it does live for years and produces new plants which are always diseased. The disease can be carried from infected plants to disease-free plants by insects. At times the spread of "yellows" in the field by insects is very complete and rapid.

Diseased strawberry plants produce very small yields of an inferior quality fruit.

Oregon strawberry acreage declined sharply following the low below-cost-of-production price allowed in 1942. Now that the price to the growers is more favorable, there is intention to plant if disease-free planting stock is available.

The Oregon State Horticultural Society has decided to hold no annual meeting this year in compliance with war regulations.—*O. T. McWhorter, Sec'y, Corvallis.*

NEBRASKA—The apple crop in eastern Nebraska is one of the shortest in many years and no doubt the quality will be about as poor as we have had for some time. The extremely wet weather early in the season was favorable for scab and unfavorable for setting of fruit. When the June drop was over, many trees had very little left to make spraying worthwhile so some of the growers just put their sprayers in the shed and left them there for the rest of the season.

However, the grape crop and peach crop are better than last year. Black raspberries were a disappointment due to frost injury.—*E. H. Hoppert, Sec'y, Lincoln.*

MINNESOTA—The Minnesota apple crop this year is one of the poorest on record. Early prospects were fairly good but there was an unusually heavy June drop probably resulting from late spring frosts. At the same time a very severe scab infection developed which further reduced crop prospects.—*J. D. Winter, Sec'y, Mound.*

ARKANSAS—Arkansas' fruit prospects, on the whole, began at the bottom this year and have steadily deteriorated since the beginning. The worst spring and early summer in perhaps fifty years had its effect.

In the northwest section of the state, where most of the apples and grapes are grown, there is approximately 10 percent of a yield for each fruit. Peaches in the section are almost a total failure, cherries completely so.

South of the mountains, the peach sections fared better, having a fair yield and quality.—*Thomas Rothrock, Sec'y, Springdale.*

IOWA—Iowa's fruit crop this year is very short. Early blooming and late frosts combined with poor pollinating weather at blossoming time greatly reduced the fruit prospects. Several growers in southeastern Iowa have nearly a full crop of fruit which is of good size and quite clean. First brood codling moth were mostly fairly light but did cause considerable damage in a few orchards. We are expecting a heavier second brood and expecting it late again this year, as was the case in 1944. Apple scab has been very serious this year, although it has been well controlled in well-sprayed orchards. The best peach crop since 1940 is in prospect. We have very little commercial production of peaches in Iowa. Practically all of our peach trees are found in the southern three tiers of counties. In all, it looks like perhaps we have about 25% of a crop of apples this year.—*H. E. Nichols, Assistant Extension Horticulturist, Ames.*

KENTUCKY—San Jose Scale in Kentucky peach orchards has now become a quite serious problem. About 5 years ago one of our peach growers in his orchard of 7000 trees had a heavy carry over of scale and

soon after harvest found the scale spreading to the extent that from all appearances the scale would literally wipe out his orchard before the dormant season. During early August we conducted an experiment using a tank each of 2 percent, 4 percent, and 6 percent summer oil, making a thorough application. Close observations were made each day for about a week and no injury resulted on any of the three experimental plots, so the whole orchard was covered at once with a 3 percent summer oil spray. Our entomologists made an accurate check up and claimed we killed a very high percent of the young scale—at least the owner saved his peach orchard.

The last half of July has been perfect weather for the spread of San Jose scale, so we feel that an application of summer oil spray applied at once is our best recommendation for saving our peach orchards, this to be followed in late fall or early winter with the regular dormant spray.—*W. W. Magill, Sec.-Treas., Lexington.*

MONTANA—Apple prospects are somewhat down from earlier estimates due to heavy drop caused by cold and rainy weather during the blooming period and resulting in imperfect pollination. The quality of the crop, however, will be good and the demand is apparently going to be heavy. In fact a considerable number of cars have already been contracted for at satisfactory prices.—*George L. Knight, Sec'y, Missoula.*

WASHINGTON—Our summer meeting on July 17 in Yakima and 18 in Wenatchee went over in fine shape. Holding a summer meeting was an experiment with (Continued on page 36)

Page 22 American Fruit Grower September, 1945

LESSONS IN ORCHARD CHEMISTRY

By E. D. WITMAN, Research Associate

Ohio State University Research Foundation

What is arsenate of lead? Where does it come from? How is it made? Such thoughts frequently come into the mind of the fruit grower as he mixes a solution for his spray tank. We have, therefore, asked Dr. E. D. Witman, Research Associate, Ohio State University Research Foundation, to write a series of articles in plain English on the many chemicals now used by fruit growers.—Editors.

ARSENATE OF LEAD

Arsenate of lead is a deadly stomach poison which is used to control such chewing insects as codling moth, curculio, maggots, etc. Some growers call it lead arsenite or simple "lead." About 80,000,000 pounds are used each year, and it is the most effective and widely used insecticide. Its production is simple.

In various smelting operations, a by-product known in chemistry as arsenic trioxide (white arsenic), is obtained. It is the raw material from which all arsenical insecticides are made.

In the manufacture of lead arsenate, arsenic trioxide is first combined with oxygen to make arsenic pentoxide which is then reacted with lead oxide (litharge).

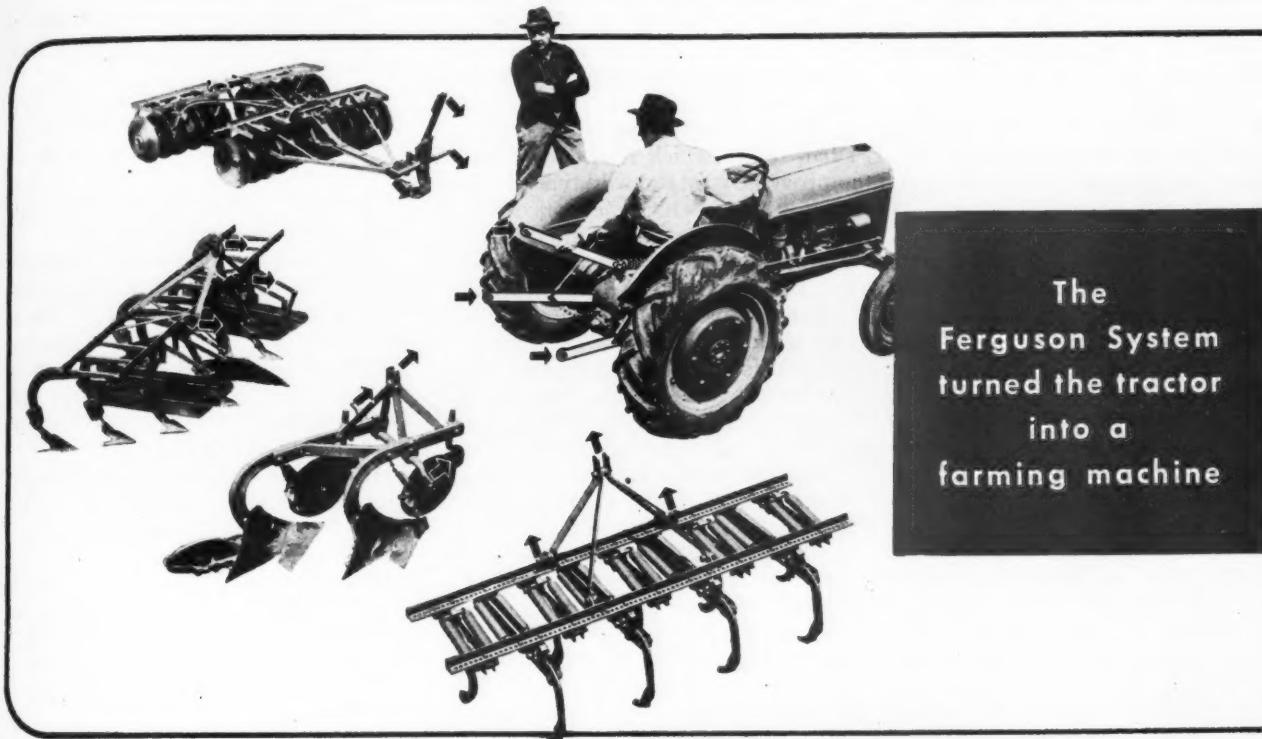
Lead arsenate is only very slightly soluble in water and is thus not likely to cause spray damage. However, like all arsenical compounds, on standing in water (or dew) lead arsenate slowly decomposes, forming complex basic lead arsenates and water soluble arsenic. For this reason various "softeners," chief among which is lime, are added to lead arsenate spray suspensions. It is sometimes advantageous to use certain iron, zinc or copper compounds for this purpose. The damaging water soluble arsenic is frequently liberated from lead arsenate by hard water or by soaps.

The highly uniform chemical and physical properties of lead arsenate are responsible for its superior adhesive properties.

Lime sulfur decomposes lead arsenate (and there is little we can do about it), forming black lead sulfide and water soluble arsenic. The fungicidal property of the lime sulfur is thus destroyed and the soluble arsenic burns foliage. It is considered good practice to add lime sulfur and lime to the tank before adding the lead arsenate, since the small amount of lime sulfur in the "heel" from the former spray may decompose the lead arsenate. Lead arsenate "dynamite" spray mixtures will be discussed in a subsequent article.

Basic lead arsenate is used only under conditions where spray injury is very likely or where the insects are easy to control. It is much less soluble in water than standard, lead arsenate.

A one-minute demonstration of the FERGUSON SYSTEM



The
Ferguson System
turned the tractor
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farming machine

One of MANY advantages

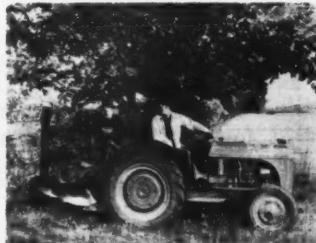
... With the Ferguson System Each Attached Implement Becomes Self-Propelled and Automatically-Controlled

The Disc Harrow, Cultivator, Plow and Tiller, shown in the above picture, are implements in the modern sense. With the Ferguson System, each in its turn, when attached to the Ford-Ferguson Tractor, becomes a self-propelled and automatically-controlled implement.

It's easy to see how self-propelled and automatically-controlled implements get work done faster, and take the drudgery out of field work.

But that is only one of the many advantages of the Ferguson System. At the right are four more advantages which make the Ferguson System the outstanding news in every farming community.

See for yourself how you can do your farm work faster and easier. Follow up this one-minute demonstration on paper with a demonstration of the Ferguson System on your own farm.



1. Implements attach in 60 seconds or less! No need for wrenches, no nuts to tighten, no parts to lose.



2. Attached implements go backward as easily as forward! No "jackknifing"—no time lost in tight corners.



3. Finger tip control permits a child to do a strong man's work! No heavy levers, no ropes, no cables.

4. Front and rear wheels can be quickly spaced to fit any crop! No adjustments needed in steering mechanism.



Ask Your Friendly Ferguson Dealer for a Demonstration

HARRY FERGUSON, INC.

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DETROIT, MICHIGAN

EPHRAIM BULL AND THE CONCORD GRAPE

(Continued from page 12)

"Rockwood," in honor of Judge E. Rockwood Hoar, a lifelong friend of Mr. Bull. It was a strong grower, prolific, black, ripening with Moore's Early. Mr. Bull claimed that Moore's Early was one of his own seedling originations, which a laborer had stolen from him and sold to Mr. Moore.

Another was named "Cottage." It was described as a strong grower, with healthy thick leaves, bunch smaller than Concord, black, heavy bloom, skin thick, pleasant flavor, large seeds, and ripening a few days before Concord.

The third was called "August Rose," because it was supposed to ripen in late August—which it seldom did, however—and because the berries, quite large, were of a showy rose amber color.

Mr. Bull's favorite was a white grape, of fine quality and delicious flavor, which he named the "Esther." Of it he said: "I have long cherished a desire to name the best grape I could raise after my dear dead mother, and I have called this one by her name, because I feel it is as near perfection as I shall ever attain."

A Great Leader

The Concord occupies a unique position as a leader. First, it leads as a progenitor of other varieties. Among the most familiar sorts of Concord parentage stand the Worden, Martha, Niagara, Diamond, Moore's Early, Highland, Brighton, Black Eagle, and others. Next, it is listed as the principal variety in the majority of the states in which the American grapes are grown.

The Concord, technically identified as of the species *Vitis Labrusca*—"the wild vine"—is often used in grape books and bulletins as the standard for comparisons, thus:

Lightfoot—ripens after Concord.

Hartford—ripens a few days before Concord.

Eaton—not as sweet as Concord, but less foxy.

Eclipse—ripens about one month before Concord.

Willis—fruit larger than Concord, both in bunch and berry.

Paragon, Magnate, Niagara, Ulster, Prolific—ripen with Concord.

That the Concord may be related to the Catawba—which ranks as an excellent all-purpose grape and one of the most interesting American varieties—is indicated in a letter Mr. Bull

wrote January 1854 to G. M. Hovey, editor of the Magazine of Horticulture, in which he said, in part: "The Concord grape is a seedling in the second generation, of our native grape . . . being at that time the only seedling I had raised which showed a decided improvement on the wild type . . . The seedling from which the Concord was raised grew near to a Catawba, and it is quite possible was impregnated by it, having the flavor of that variety."

Thus, apparently, one of nature's own choice seedlings was standing by to exercise prenatal influence upon another . . . and surely no other grape on the continent was so well-qualified for the privilege as the Catawba.

Concord cuttings went to Europe direct from Mr. Bull's own vineyard, in the late 70's or early 80's when the phylloxera was attacking the vineyards of France, and the Emperor Napoleon had sent an agent to America to investigate local conditions. The agent called upon Nicholas Longworth, grandfather of the late Speaker of the House of Representatives, who had a vineyard of Catawbas near Cincinnati, and also upon Mr. Bull at Concord. Mr. Bull presented the agent with a bunch of Concord cuttings to be delivered to the Emperor.

The Concord caught public fancy like a popular song, doing all Mr. Bull could hope, except to make him wealthy.

It would seem that, as a special honor of national significance, the year 1949 might well be observed as the centennial of the birth of a great fruit.

Record of Awards

Mr. Bull's story would not be com-

plete without a list of some of the recognitions accorded him. The following data are from the records of the Massachusetts Horticultural Society:

1854—Gratuity of \$10 to E. W. Bull for his liberal show of Concord grapes.

1855—To E. W. Bull, for Concord grapes, a silver medal.

1856—The Concord is now widely disseminated, and some are strenuous in its favor.

1857—To E. W. Bull, for best specimens of native grapes at annual exhibition, \$5. Similar small awards were given to Mr. Bull over a period of years for other, unnamed, seedlings which he originated.

1873—The Committee on Fruits reported the Concord the most popular of all grapes, and declared . . . "it is safe to say that Mr. Bull has been the means of affording the enjoyment of good grapes to thousands, if not millions, of people who would not otherwise have tasted them."

1874—Gold Medal of the Society, valued at \$60.00, awarded to E. W. Bull, for the production of the best hardy seedling grape, the Concord, which has proved, after a thorough trial, to be universally adapted to general cultivation throughout the United States, and to be the most reliable grape for vineyard cultivation in Massachusetts.

Mr. Bull's talents were given recognition also from other sources. He was elected a legislator and served in the House in 1854, and in the Senate the following year. Governor Gardner appointed him House Chairman of the Committee of Agriculture. He was also made a member at large of the State Board of Agriculture, a position he filled for twelve years, and, quoting Secretary Flint, "did more probably than any other man, through the admirable papers which he furnished,

(Continued on page 26)

Page 24 American Fruit Grower September, 1945



HERE'S AN IDEA FOR FANCY FRUIT PACKAGING

Fruit Growers, here is something you need for your fancy fruit trade. It is a neat, durable, attractively colored split cane basket. You or your friends may want to make a gift of fruit to a returning serviceman or friend. The housewife can also use the basket for a sewing kit, shopping purposes, or other household use.

There is a place in every market for at least a small quantity of really fancy fruit, and these baskets can readily be obtained. An attractive basket can do much to dress up your fruit to meet the best of society.

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Here it is... GRAHAM-PAIGE'S
New Scientific Farm Implement

ROTOTILLER

Trade Mark Reg. U. S. Pat. Off.

Model B1-4

"MADE TO ORDER" FOR THE
FRUIT GROWER!

INSTANT CONTROL!
Simple easy-working controls right at your fingertips
—to start or stop instantly.

NEW POWER-DRIVE!
Amazingly simple new drive transmits power to rotating tines with minimum of loss.

5 H. P. MOTOR!
Rugged, efficient motor.
Uses only about $\frac{1}{2}$ gallon
of gasoline per hour!

ROTATING TINES!
Dig forward as they go,
shredding and mixing soil,
fertilizer and stubble.

QUICK STARTING!
Improved device assures
quick starting under all
operating conditions.

The Rototiller is a revolutionary new power-tool for scientific tillage of the soil. It has already won enthusiastic endorsement from thousands of users all over America. The powerful slashing action of Rototiller's whirling steel tines prepares a deep, loose, thoroughly crumbled seedbed or moisture-retaining mulch without the use of plow, disk or harrow. Yet it operates with amazing economy, because the rapidly rotating tines help to propel the machine forward, instead of lending additional drag as is the case with conventional implements.

Only the handy "walking models" are being manufactured at the present time. But Rototillers have already been developed in special tractor-drawn types, for large-scale farming, that will

soon go into full quantity production.

The new Model B1-4, illustrated above, makes an excellent extra power-tool for the average farm, or a primary implement for the fruit, vegetable or berry farm, vineyard, grove, orchard, nursery, estate, or garden. It will operate well in confined areas where tractors or teams would be out of the question, often doing work formerly requiring large crews with hand tools.

The Rototiller mixes organic materials and fertilizers thoroughly into the soil where they can feed the roots of the crop. "Once over" is usually enough to prepare ground for immediate planting. It is even used for mixing soil and cement in a remarkable new time-and-labor-saving method of preparing concrete

walks, drives and airstrips for both military and civilian use.

Fill out the coupon below and mail it in for information about the Rototillers already available and others soon to come. Graham-Paige Motors Corporation, Farm Equipment Division, Detroit 32, Michigan.

Yes, there's a new kind of car a-coming! And Graham-Paige's Board Chairman, Joseph W. Frazer, known for his strong and far-sighted leadership, is getting ready to build a great new car under his own name—the Frazer!



ROTOTILLER

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Graham-Paige Motors Corporation
Farm Equipment Division
Detroit 32, Michigan

Please send me complete information about ROTOTILLER, for scientific tillage of the soil without plow, disk or harrow.

Please send facts about dealer franchise. (A few choice territories available for qualified dealers.)

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Address _____

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The agricultural experts of Graham-Paige's new Farm Equipment Division have other exciting plans already well under way. New improved tractors, big field-type Rototillers, and several practical new farm implements, will all be made in our big plant at Warren, Ohio.





Handle Peak Production Easily

Cold storage operators are loud in their praise of Rapid-Wheel Portable Gravity Conveyors that easily handle peak loads. Man-power shortage holds no fears for them when seasonal harvests demand quick handling of perishables from trucks to sorting table . . . to storage.

Let gravity and "Rapid-Wheel" work for you. Units are available for many uses where crates, boxes and bags are handled. Light weight, easy to handle and simple to assemble, Rapid-Wheel Conveyor units can be moved about to fit changing needs. There are models to suit your particular requirements. Write for detailed information.

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Used for weed burning,
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GIFT FRUIT BASKETS

Strongly Made of Split Cane with Stripes of Color. Half Bushel Basket With Cover—Diameter of Base 12"; Height, 11 1/4". Bundles—10 Baskets Wrapped in Native Matting.

\$10.25

F.O.B.,
New York
Minimum Order
Two Bundles—Immediate
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slipping ladders. Get a
FRUIT PICKER
6-Ft. Handle \$2.25
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2021 Gay St., Fort Wayne 3, Ind.

EPHRAIM BULL AND THE CONCORD GRAPE

(Continued from page 24)

to awaken an interest in the cultivation of the grape."

In April and May, 1865, Mr. Bull delivered three lectures on "Grapes and Grape Culture" at Harvard. He also often spoke at horticultural meetings and agricultural fairs.

In 1872 the State Board of Agriculture presented him with a silver trophy for seedlings, similar to the one he had received from the Horticultural Society.

And, shortly before his death—he lacked six months of reaching ninety—Mr. Bull's heart was gladdened by a timely check for \$100, which came from the American Association of Nurserymen, with the following resolution:

Resolved, By the American Association of Nurserymen assembled at their Nineteenth Annual Convention, that, recognizing the great value to the vast mass of amateur grape growers, as well as to the vineyardist, of the Concord, and learning that Mr. E. W. Bull, the originator of the valuable grape, is in advanced age, without the earthly possessions which should be his reward for his past services, we hereby tender him the sum of One Hundred Dollars, a freewill offering from the members of this Association, as a slight appreciation of our esteem for him and of the great benefit he has bestowed upon the Horticultural World.

Signed {W. H. Albaugh } Committee
{Irving House }

The Greeley Prize

The Concord won the Greeley prize of \$100 in 1866 and a silver cup at Cincinnati two years later. The end Horace Greeley had in view in offering the prize was to stimulate production of new and better vines. It was given through The American Institute of the City of New York, and was won by William H. Goldsmith, of Newark, New Jersey, who, as recorded in the proceedings of the "Farmers' Club," at a meeting of the American Institute, held October 23, 1866, "made the best exhibition of the Concord grape at the late fruit show of the Institute."

Mr. Greeley, who about that time wrote a book entitled, "What I Know of Farming," in which he presented "a series of brief and homely expositions of practical agriculture as an art based upon science," did not seem to think that the Concord deserved the award—that was in 1869—although he is generally credited with having said, later, that "The Concord is the grape for the millions."

Concord Grape Not Perfect

The very best of grapes, like the best of human beings, is not exactly perfect, and even the Concord, good as it is, still has a few faults. These, as given in Farmers' Bulletin No. 1689, are:

"Mediocrity in quality; lack of richness, delicacy of flavor, and aroma; great foxiness, objectionable to many; large and abundant seeds that are difficult to separate from the flesh; tough, astringent skin, inclined to crack; berries inclined to shell from stem after picking; rapid loss of flavor after ripening; does not ship and keep as well as many other varieties; and being essentially a northern grape, when grown in the South becomes susceptible to fungi and ripens unevenly."

There remains therefore much room for the evolutionary process to continue its quest for the desired goal in grapes, and it may be assumed that the two inseparable co-workers—Nature and Man—will keep on experimenting, till many more and better varieties of the luscious fruit are produced.

Perhaps the goal has been attained in a new grape called the "Early Giant"—the first grape to receive a U. S. Patent. What a pity Mr. Bull could not have foreseen the need of protecting his interest in the Concord in a similar manner! This new grape also was originated from a seedling—by Herman J. B. Weiderkehr, of Altus, Arkansas, successful grape grower in that state. The Early Giant is declared to be the largest known grape of all hardy varieties, and a producer of tremendous tonnage. The berries often measure one-and-one-eighth inches in diameter.

The Early Giant was bought in 1928 by Stark Brothers' Nurseries, of Louisiana, Missouri, and is handled exclusively by them. This nursery was established in 1816, and was already doing a flourishing business when the Concord appeared a hundred years ago.

Portrait of Mr. Bull

An intimate delineation of Mr. Bull, with pathetic aspects, was given in a paper prepared by William Barrett, and read by him in 1898 at a meeting of the Concord Social Circle, of which Mr. Bull had been a member.

"The Concord Social Circle," quoting from a letter from the Concord Antiquarian Society, "probably originated in the Committee of Safety. It

(Continued on page 28)

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When Knights were Bold...they were not so Big

Most of America's fighting men couldn't begin to squeeze into the armor of the Middle Ages. Nevertheless, wartime studies reveal that nearly half of our population suffers from dietary deficiencies, while yet having enough to eat.

This serious problem is being tackled with typical American thoroughness by physicians, dietitians, food processors and scientists. In an ever-expanding program of research for better nutrition, the ten great laboratories at Anheuser-Busch have made some significant contributions.

Many tons of specially grown food yeasts have been produced by Anheuser-Busch to fortify the diets of the armed forces.

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Protein is the most important food element found in meat, fish, eggs and dairy products. Specially grown food yeasts, yielding a high ratio of protein containing the ten amino acids established as necessary for normal health, have been produced in vast quantities for dietary purposes.

Our diet kitchen has found dozens of ways to incorporate these highly nutritious food yeasts into economical, body-building dishes, each with a delicious flavor.

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Anheuser-Busch, are specially grown for their nutritional value. *Do not confuse them with the compressed, fermentable yeasts you have previously known.*



Manufacturers of food and drug products interested in nutrition fortification; hospitals, war plants, institutions; physicians and dietitians requiring dietary supplements rich in proteins and high in Natural B Complex Vitamins, are urged to write us for complete information on the nutritional value and multiple uses of "Dried Food Yeasts."

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BUY TO LAST

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Philadelphia 32
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ARMY NAVY

THE CONCORD GRAPE

(Continued from page 26)

was formed about 1778, for free discussion, etc. It was a club of about twenty-five townsmen of Concord, in all occupations, and is still limited to twenty-five members. It meets every Tuesday evening, and is still active."

We learn from Mr. Barrett's paper that almost unconsciously the Concord grape slipped out of the hands of its originator, filling the coffers of others but bringing little money to his. Mr. Bull did make an effort to get money out of the Concord, having circulated a handsome poster, but seemed to lack the faculty of pushing his product, such as the proverbial Yankee nurseryman had, and so the profit that should have been his went elsewhere. This was a bitter thought to Mr. Bull and seemed to affect his whole temperament, being particularly noticeable in his home life. While he was in politics and public life he was careful and even elegant in his dress. He wore a silk hat, shaved meticulously, and adorned his head with a glossy wig of wavy yellow-brown hair of moderate length. But after his retirement, and domestic misfortunes, a startling transformation occurred. He suddenly appeared as an old man, with snow-white head, nearly bald, oftenest seen in a dressing gown and little silk cap, tending his plants lovingly.

The four seedlings already mentioned would have brought fame and money to him, Mr. Barrett said, for they were worthy of cultivation, but as a matter of fact he realized little, if anything, from them. With advancing age he had grown more and more suspicious and distrustful. He was living alone, and solitude was conducive to brooding over troubles and disappointments.

"To my oft-repeated question, 'Why don't you put these on the market?'" Mr. Barrett wrote, "he would reply, 'There are no honest nurserymen; I shall be cheated.' And then he would cite instances where he had been swindled, some of which were undoubtedly true, as I have since discovered from his papers."

The "Cottage" grape seems to have been circulated, however, for we find it described in "Foundations of American Grape Culture," by T. V. Munson, of Denison, Texas, published in 1909. Says Mr. Munson: "The Cottage is a sister of Concord... similar in appearance, but smaller in cluster... It is now generally discarded."

As the years slipped by Mr. Bull grew poorer and feebler, while his buildings kept pace with him in decay. His friends tried to persuade him to give up and come in town, where he

could be better cared for, but he would not listen to suggestions that he leave his old home. Judge Hoar bought the estate, permitting Mr. Bull to continue as occupant of the house. In 1893 the judge sold the property to Mrs. Daniel Lothrop, a neighbor and admirer of Mr. Bull, who had dreams of preserving the place as a memorial to him. Late in the autumn of that year Mr. Bull climbed the low slanting roof of the house to repair a leak. He slipped and fell to the ground, and though not seriously injured the shock to his system resulted in pneumonia, which almost proved fatal. As winter came, and his friends found it impossible to give him proper care in his dilapidated home, he finally consented, though reluctantly, to be taken to the Concord Home for the Aged. It was at this time that he received the \$100 gift from the Nurserymen's Association.

Mr. Bull was the father of three children—a daughter and two sons. The boys died in middle life, after going west. The daughter, Mary Ellen, married a son of the Lauriat for whom Mr. Bull first worked. Mrs. Bull died May 8, 1891, at the home of her daughter in Medford, Massachusetts, having lived there for twenty years. She was spoken of as a most estimable lady, of a sweet disposition and retiring nature, and devoted to her family. The married life of Mr. and Mrs. Bull had been happy, reports Mr. Barrett, until Mr. Bull's maiden sister came to live with them.

Late in September, 1895, Mr. Bull became sick, and after a brief illness passed away . . . "from old age and general dissolution." Funeral services were held in the Unitarian Church, and he was laid at rest in Sleepy Hollow Cemetery in the family lot. His grave is marked by a good-sized native boulder, with a bronze tablet bearing the following inscription:

Ephraim Wales Bull
The originator of the Concord Grape
Born in Boston March 4, 1806
Died in Concord September 26, 1895

He sowed—others reaped.

Around the inscription runs a grapevine representing the Concord grape. This memorial was erected by his daughter.

Mrs. Lothrop's dream of a cottage memorial to Mr. Bull came true within five years after his death. It was called Grapevine Cottage. The event was featured by the Boston Herald in its issue for Saturday, April 14, 1900, under the heading: "Humble Cottage of Ephraim W. Bull to be Rededicated on Monday."

The reporter who wrote the story sketched this pretty scene from Mr. (Continued on page 35)



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You could scarcely call this battle-scarred route a road, but the GMC Army truck with its powerful "270" engine driving through all six wheels takes it in stride. A GMC is powered for punishment . . . built to work under the most adverse conditions where bombs have blasted roads and bridges . . . where rains have made a sea of mud . . . where extreme temperatures make it "tough going" for any vehicle. A GMC can "take it" under fire, too. During a recent invasion, an exploding enemy shell damaged chassis and body of a GMC. But despite the damage, it carried load after load of supplies before a maintenance crew had time to make repairs. In every theater of war, this fighting reputation is being multiplied a thousandfold. For the "six-by-six" and other GMC trucks and "Ducks" delivered to the Armed Forces number over 575,000.

In addition to being one of the largest producers of military vehicles, GMC also manufactures many commercial trucks for essential users. Civilian GMCS are powered by engines of the same basic design as the famous "270," used in the GMC "six-by-six" . . . the "Workhorse of the Army."

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Prices are good — increase your income — cut now.

For exact details get in touch with your railroad agent or your nearest tie producer or contractor.



AMERICAN RAILROADS

PROMISING GRAPE VARIETIES

(Continued from page 11)

idly. Portland has proved to be an excellent grape for the home and local markets. Older vines may lose their vigor and where this occurs grafting upon vigorous rootstocks is recommended.

Seneca, a cross between Lignan blanc, a French grape and the Ontario, was introduced in 1930 for trial. The vine is vigorous but only medium in hardiness and productiveness and is subject to downy mildew injury. Its clusters are medium in size and moderately compact while its berries are medium and oval in shape. The texture is melting and the flavor sweet and vinous. Seneca is excellent to eat out of hand and is reported as desirable for wine.

Other White Grapes

Ripley, Brocton and Golden Muscat were introduced respectively in 1912, 1919, and 1927. The first two ripen in midseason and are very good in quality. Both are desirable for the home and the Ripley, a sister to Ontario, has merit for white wine.

Golden Muscat, a cross between Muscat Hamburg and Diamond, was introduced for trial in 1927. Its vine is vigorous and productive and bears exceptionally large clusters of large, oval, golden-yellow berries of high quality. Although derived from a highly-flavored Muscat, it inherited only a slight amount of the Muscat aroma. Golden Muscat has been widely tested and favorable reports have been received as far south as Guatemala and California. In Georgia the skin is said to crack but very little cracking has been noted in the north. Like its Muscat parent, it produces some small berries that ripen earlier than the large ones. Although not as hardy as the Concord, it has proved sufficiently hardy for the grape areas in New York. In addition to its good dessert quality, it makes a desirable white wine. Unfortunately its skin is too tender for a good shipping grape and it requires a season as long as Catawba to ripen.

Red Grapes

Fewer good red grapes have been produced than either blacks or whites. Dunkirk, a cross between Brighton and Jefferson, was introduced in 1920. It produces a cluster that reminds one of the Delaware, although berries average larger and are less aromatic. In addition to its dessert qualities, it is reported as desirable for wine.

Hanover, a Brighton by Niagara cross, was introduced in 1928. Al-

though this variety is productive and produces clusters above medium in size and berries of good quality, it has not attracted sufficient attention to warrant general planting.

Keuka, a high-quality, late-maturing red of excellent quality was derived from a cross between Chasselas Rose and Mills. Unfortunately its vine is not winter hardy, although at Lewiston, Idaho, it has performed well and has proved to be a desirable wine variety.

Hector, a Chasselas Rose by Brockton cross, was introduced in 1937. This variety like Keuka is subject to mildew and requires thorough spraying. Vine is vigorous and productive; clusters large and compact; berries medium in size, sweet, vinous and good in quality. Hector ripens after Concord.

Yates, a Mills by Ontario cross, was introduced in 1937. Vine is vigorous and productive and its clusters and berries are large and attractive. Its flesh is juicy, sweet and vinous and its skin sufficiently tough to make a good shipper. It ripens after Concord and has merit for both dessert and wine.

Urbana, a cross between Ross and Mills, was introduced in 1912. Its main assets are its long keeping and good quality. It requires a long season to ripen and thorough spraying since it is susceptible to downy mildew injury.

Ruby derived by crossing Keuka with Ontario was introduced for trial in 1938, owing to its attractive red color and good quality. Its clusters are large, while its berries are medium in size, juicy, tender, sweet and vinous. Vine is vigorous and productive but fruit ripens unevenly and requires a season longer than that of Concord. It has not been tested sufficiently to evaluate its possibilities.

Any information in regard to the performance of the Station's varieties will be appreciated, for recommendations are based largely on such experiences.

INSECTS AND DISEASES

(Continued from page 15)

thorough coverage are two important factors in spraying, regardless of the plant being sprayed. The materials and concentrations used against a particular insect or disease are fairly constant the country over, but do vary some from one state to another. Therefore, a grower should consult his own State College concerning specific recommendations. As an example of how a grape spray schedule may be devised, the Michigan Spraying Calendar is presented on page 15.



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KEEPING VINES VIGOROUS

(Continued from page 13)

Ohio vineyard soils, it was learned that the organic matter losses ranged as high as 80% of what was originally present. Similarly great losses were noted for the total nitrogen content of the soil. This decline in organic matter and nitrogen content of the soil has resulted from high rates of oxidation brought about by excessive tillage, no replacement through the use of cover crops or manure, and accentuated in many cases by the loss of most of the top soil by erosion.

Accompanying the loss of organic matter and nitrogen has been a degradation of the surface soil. That is, a destruction of the ability of the surface soil to resist the dispersing action of heavy rains and become puddled which allows surface runoff instead of water penetration. Such results indicate that many of the grape growers of this region are raising grapes on soils which have markedly declined in physical and related chemical characteristics.

Originally, thorough and frequent tillage was the best cultural practice because it effected a rapid release of nutrients by the oxidation of accumulated organic matter in the virgin soil. Thorough tillage can no longer release nutrients to the growing vines because the organic matter has been practically destroyed in many vineyards. Thus at present excessive tillage simply aggravates the undesirable physical character of the soil which has developed during long periods of tillage.

This same study of Northern Ohio vineyard soils revealed some loss of mineral nutrient elements such as calcium, potassium and phosphorus. The amount of loss of these mineral elements was not large enough in the majority of cases to become limiting factors in production at the present time. However, if sufficient organic matter is restored to these soils, it should be kept in mind that some of these mineral nutrients might become limiting factors in production.

It has been stated that soil stability is the key to soil productivity. By soil stability is meant the ability of heavy soils to retain a granular, crumb-like character in the face of hard rains and moderate cultivation. Many investigators have found that soils with poor stability do not respond to fertilizer treatments even though such soils are low in nutrient elements. Even though nutrients are present in sufficient concentration, they may not be utilized by plants

unless there is sufficient aeration and drainage or water penetration and holding capacity. This explains why there has been practically no increase in yield from fertilizer additions to vineyards in which the organic matter is gone and in which the crumb-like structure of virgin soil has been destroyed. The only soil amendment which has given consistent increases in yield in our experiments has been through the use of relatively large amounts of manure.

In order to increase yields it thus becomes necessary to use methods whereby these vineyards can be returned to and maintained under conditions which permit a favorable soil stability to develop. The first prerequisite to developing a favorable physical condition in the soil is by increasing organic matter and its complement, nitrogen.

RECOMMENDATIONS

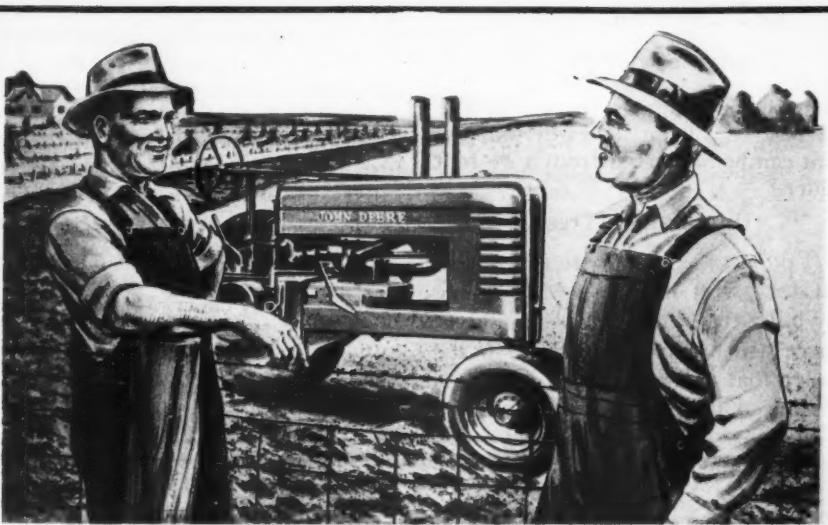
1. It is of paramount importance to select a good site. No amount of hard work and good cultural practices will overcome the handicap of a site which is exposed to late spring and early fall frosts or which has inadequate drainage.

2. Periodic elimination of old unprofitable vineyards and maintaining young vineyards of varieties most profitable in a particular locality. There are many old vineyards which are no longer profitable except during very favorable seasons. It would be better to renew vineyards, particularly on unfavorable soils, after twenty to twenty-five years. In other words, a succession of vineyards, so that blocks of different ages would be maintained.

3. Less intensive cultivation and a program of soil conservation such as contour planting where necessary and the use of cover crops should be used to control soil erosion. Tillage should be shallow and reduced to the minimum necessary to control berry moth and weeds. A great source of difficulty is the continued cutting of grape roots by deep plowing or disk-ing near the vines. A device for tillage which would avoid this damage is required and some tool such as the Anderson grape hoe is an improvement over many tools now in use.

4. Grapes have been found to respond rather strikingly to applications of stable manure at the rate of 8 to 10 tons per acre. On depleted or eroded soils no response was obtained from the use of commercial fertilizers alone regardless of analysis. On more favorable soils the use of nitrogen, at the rate of 250 pounds per acre of sulfate of ammonia or its

(Continued on page 35)



ACROSS THE FENCE

Across-the-fence enthusiasm that radiates from John Deere tractor owners everywhere is the direct result of actual experience, for which there is no substitute. It has had a tremendous influence with farmers who today have more than one-half million John Deeres on their places, and with the many more thousands who have placed their orders for earliest possible delivery and are "standing by."

This recognition and appreciation by farmers of the true tractor values, accentuated by the stress of wartime food production, has done more than any other one thing to spread the popularity of John Deere tractors.

Wartime operation by boys and farm women has added greatly to the list of John Deere tractor enthusiasts. With starter and lights, hydraulic control, hand clutch, standing platform, good vision, and easy steering, it has been easy and practical for them to pinch-hit in meeting the acute farm labor shortage.

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John Deere tractors are built in 6 power sizes and 20 models with matched integral and drawn equipment to meet your most exacting needs.

With the speeding up of production, as material and manpower become available, more and more John Deere two-cylinder tractors will be coming off the assembly line. If you need a new tractor and can't get a John Deere now, why not place your order with your John Deere dealer. A John Deere tractor is well worth waiting for.

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Model "A"
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Seven types.



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3-plow size.



Model "B"
2-plow size.
Seven types.



Model "H"
1-2-plow size.
Two types.



Model "D"
3-4-plow size.

NATIONWIDE FRUITS

(Continued from page 17)

should be high enough for any mature cherry tree . . . or a height that the fruit can be harvested from a 14-foot ladder.

Unprofitable Trees

"I do not feel that there is any reason for sweet cherry trees growing any taller than other large fruit trees. There are hundreds of trees in the Valley that will not remain profitable if allowed to grow unpruned.

"You may ask if there is sufficient knowledge on pruning mature cherry trees to make it possible for the average pruner to do a satisfactory job. Yes, I think that if a pruner has a good knowledge of proper tree structure, he can prune mature cherry trees satisfactorily. Every tree is different in framework so must be treated as an individual.

"I have often been asked why I prune back my cherry trees more than most growers. My reasons are many. First, I can harvest the fruit better from new growth, lower in the tree. For instance, I pruned back heavy in

1942 which forced out a lot of new growth that will produce well at least until 1952. I will not prune much of any now until after that date.

"I find this new growth forced out on lower limbs produces better quality fruit and seems to bear more in proportion to the bearing space. The fruit is naturally easier to harvest. It is not bruised by wind or sun dried as is often the case with tall trees. The fruit ripens more evenly over the tree and not so uneven as is the case with tall trees.

Thorough Spraying

"While cherry trees are not sprayed often, I find that the lower trees can be sprayed more thoroughly and kept pest free. Harvest help always seems more plentiful when the trees are low.

"Pruning to lower the tree is not the only problem. Opening up the tree so that more sunlight penetrates to all portions will strengthen the fruit buds to produce better cherries. Cherry trees like all other fruit trees should have a minimum of big wood. Perhaps the greatest mistake that cherry pruners make is to leave the big leaders and cut back the tops to a high lateral.

"That is a mistake, I'm sure. When that is done the new growth is stimulated in the tree top and eventually makes a higher fruiting area. My suggestion is to come down to the main crotch, if possible, and take out whole inner leaders, thus forcing out new growth on lower outside limbs. I always come as low as possible to remove leaders that will open up the tree and lower the height as well. Some of these cuts are pretty good size but the trees are healthy and the wounds or cuts, if properly made, should heal without permanent injury to the trees.

Pruning Time

"I'm also often asked when is the best time of year to prune. In my own orchard I have preferred late August or September. We have never observed any injury from pruning at that time. Perhaps in some other locations it might not work as well. My reason for pruning at that time is because it is past the time when serious sun-scald will occur and there seems to be less injury to fruit spurs by falling limbs.

"In conclusion I would like to say that pruning sweet cherry trees is a real problem and one that growers should study more to learn all the various angles. It has worked well for me and I hope the suggestions that I have made will be helpful to other cherry growers."

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From where I sit ... by Joe Marsh



Mad Dogs and Wagging Tongues

The county had a "mad dog" scare last week. Phoebe Token's spaniel bit the postman, and he vowed that he was plenty mad about it.

But by the time the rumor got around, it wasn't the postman who was mad, it was the dog. And before the truth was learned, half the kids in the neighborhood had missed school, while their mothers nearly died of fright.

Wagging tongues can cause a lot of "mad dog" trouble. Like the wagging tongues that gossip

about soldiers drinking too much around Army camps. There's not a bit of truth in it—as the government found out and told us. Milk and beer are a soldier's favorite drinks—which is why we have the best behaved army in history. But these ugly rumors are bound to hurt morale and cause hard feeling.

From where I sit, wagging tongues can cause a heap more trouble than mad dogs.

Joe Marsh

THE CONCORD GRAPE

(Continued from page 29)

Bull's life, which will be appreciated by all who find delight in one or all of the trio of great treats—consisting of Eating Grapes, Grape Juice, Wine . . . and jams and jellies besides—so richly produced by the Concord Vine:

"Mr. Bull was a philosopher, and no higher tribute can be paid him intellectually than to say he was the friend and companion of Hawthorne. In fact, the intimacy between the two was always remarkable. Hawthorne, the reserved and retiring toward his other neighbors and townspeople, would sit for hours in the company of Ephraim Bull, at his home, in his garden or up on the hilltop, finding a full meal of enjoyment in the free, unrestrained discussion of men and affairs."

These are highlights in the life of the discoverer of the greatest American grape, and the beginning of the life of the grape itself.

Because no other variety of grape equals the Concord for the making of unfermented grape juice, and World War Two greatly stepped up the demand for this wholesome beverage, grape growers in the east and northwest have been induced to plant more and more Concords. A few of the leading grape-juice makers have recently distributed hundreds of thousands of Concord plants among interested growers.

Hence, the Concord is definitely on the boom.

It is beginning for itself a new era.

VIGOROUS VINES

(Continued from page 33)

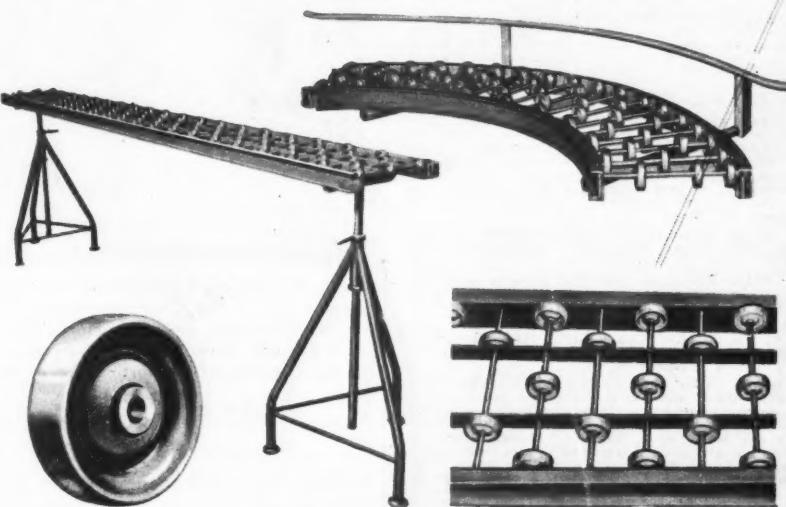
equivalent, was profitable. A complete fertilizer, such as a 10-6-4 used at the rate of 500 pounds per acre, may be used to obtain a better stand of cover crops. In some cases an application of agricultural lime may be required. A cover crop of oats or rye at the rate of 2 bushels per acre or buckwheat at the rate of 1 bushel per acre sown during late summer will assist in maintaining a better tilth and organic matter content in the soil.

Finally it must be remembered that, in order to increase production and thereby profit, a system of culture must be used which will maintain and not destroy organic matter. Vines which grow in soil as nearly as possible like a virgin soil will thrive and yield abundantly, provided the site is favorable, and diseases and insects are kept under control.

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Three outstanding horticulturists who helped make the twenty-third annual Ohio Orchard Day, August 8th, at the Ohio Agricultural Experiment Station one of the best are: (left to right) C. W. Ellenwood, Associate Horticulturist of the Ohio Station; Dr. Stanley Johnston, Director of the South Haven Experiment Station, South Haven, Michigan; and Dr. J. H. Gourley, Chief of the Department of Horticulture at the Ohio Experiment Station.

STATE NEWS

(Continued from page 22)

us this year. This is the first one we have had, as far as I know. Interest in the field day was excellent. There was an attendance of over 400. We tried to schedule the meeting in between first and second crops and were quite successful.

The prime objective in holding a summer meeting was to give growers an opportunity to see some of the latest development in orchard work. Features on the program included such items as different types of large volume sprayers, special irrigation observations, rosette control, tree spreading, fruit thinning and numerous others. As I indicated, interest in the program was very good. We are quite convinced that we should plan to hold a summer meeting each year.—John C. Snyder, Sec'y, Pullman

OHIO—The Ohio State Horticultural Society had one of its best attended summer meetings in years at the orchard of its president, W. W. Reynolds, near Utica, Ohio. Growers saw a fine crop of peaches maturing in the orchard of the Society's president, but few apples, as is true in all parts of the state.

Carroll Miller, secretary of the National Peach Council, delivered the main address of the afternoon. Enlightening growers upon tactics of organized labor, he emphasized the extreme necessity of agriculture, particularly the fruit growers, to back their organizations to the fullest

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extent. L. L. Rummell, director of Public Relations of the Kroger Grocery and Baking Company, presented evidence that the consumer is willing to pay a higher price for good quality peaches, tree-ripened, than for green or hard ripe fruit.

Orchard Day held on the Ohio Agricultural Experiment Station grounds the following day, August 8, was also one of the best attended in many years. Though the Station had no abundant fruit crop to show growers, except its peach crop, the staff of Horticulture did give them a great deal to think and talk about concerning mulches, fertilizers, pruning, dwarf rootstocks, cultivation and soils.

Stanley Johnson, Director of the South Haven Experiment Station, Michigan, and one of the most noted peach specialists in the country, delivered the main address of the afternoon program. Reviewing the whole scene of peach growing, Dr. Johnson placed special emphasis upon keeping the peach orchard in a thrifty state of growth by proper cultural methods, fertilization, and spraying.

V.P.I. HAS NEW HORTICULTURAL HEAD

After more than a year's search on the part of the officials at the Virginia Polytechnic Institute at Blacksburg, Virginia for the best-qualified person to head the work in horticulture there, Dr. John R. Hutcheson of the Institute has announced that the position has been most ably filled by Dr. Earle L. Overholser of Pullman, Washington, who will take charge of his new work on September 15.

Dr. Overholser received the B. S. and M. S. Degree in horticulture from the University of Missouri and the Ph. D. degree in pomology from Cornell. He has served ten years with the University of California and a number of years as head of the Horticultural Department at the State College of Washington.

H. L. Price, Dean of Agriculture at V. P. I. said of Dr. Overholser's appointment, "He comes to us highly recommended by Dean E. C. Johnson of the State College of Washington, Dr. Hartman of Oregon and others with whom he has been associated. We have reason, therefore, to believe that his experience as a teacher, researcher and administrator should fit him well for the position for which he has been selected . . ."

NUT GROWER NEWS

NORTHERN NUT GROWERS WILL NOT HOLD MEETING

THE annual meeting of the Northern Nut Growers Association will not be held this year owing to the continuance of the present restrictions on travel. The Association will, however, publish its annual report for 1945 which is designed to keep the members up to date on recent developments in nut culture.

The 1944 report of the Association was mailed to all members in June. Others may purchase this report from the secretary at \$1.00 a copy. This report is excellent reading for all persons interested in the culture of hardy nut trees. It contains 124 pages of text and is well illustrated. The principal papers deal with black walnuts and chestnuts, but there are articles on filberts and butternuts. Hickory species and root-stock studies of hickories receive considerable attention in an article by C. A. Reed.

On September 1st, Miss Mildred Jones, P.O. Box 356, Lancaster, Pa., becomes secretary of the Northern Nut Growers Association. Miss Jones is exceptionally well qualified for this work. As the daughter of the late J. F. Jones, one of the soundest authorities on the culture of hardy nuts, Miss Jones early became familiar with nursery practice and the culture of nut trees. The successful operation of the Jones Nursery has acquainted her with the problems of the producer and purchaser of nut trees. She is an active member of the Association and has been familiar with its affairs for several years. Members and others with inquiries about various phases of nut culture will find Miss Jones well-qualified to answer them.

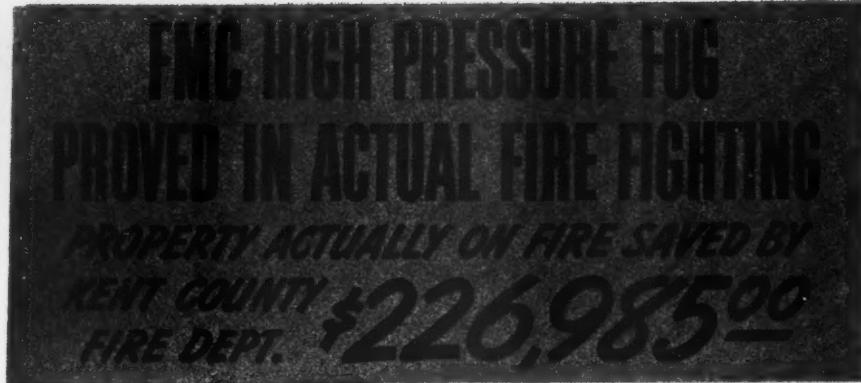
GEORGE L. SLATE, Sec'y,
Northern Nut Growers Assn.,
Geneva, N. Y.

Flavor

By Ernest C. Crocker

Here for the first time the scattered material on every aspect of flavor and odor is gathered in one definitive volume. The book explains fully the physiology of flavor perception.

In discussing fruit flavors, Mr. Crocker points out that with many fruits, including apples and strawberries, the aroma of the fruit is concentrated in and just below the skin.



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The book is well illustrated with color and black and white plates and line drawings of individual specimens.

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See
Page 102

EDITORIAL PAGE

AMERICAN FRUIT GROWER

E. G. K. MEISTER
Publisher

J. H. GOURLEY
Associate Editor

At Last It's Over!

PEACE has come at last! . . . After almost four years of fighting abroad and united effort at home, we again have peace. The fruit growers and farmers of America, feeding supply lines with the most vital weapon—food—have contributed immeasurably to bring this about.

General Dwight D. Eisenhower stated recently that the two great needs in the world today are moral leadership and food; he paid tribute to food as a critical weapon of peace. He stated: "In spite of floods, in spite of droughts, every handicap that can be imagined, this country *must produce food*. Without it, there will be no peace. At the best there will be uneasy cessation of hostilities. We cannot stand that. We must have peace and among other things that means we must have food."

We have won the peace . . . fruit will help keep it!

Stuck In the Mud

TOM LE MONT is doing a fine job of editing the New York State Horticultural Society News Letter. He brings his practical experience into problems as the following editorial, *Stuck in the Mud*, plainly shows. Here is a problem for the state experiment stations and tire companies to work out. Iowa State College, Ames, Iowa, Firestone and Goodrich have already done much along this line and should be called into the conference. . . .

"I think every grower has had this experience," says Mr. Le Mont. "As new and better dormant spray materials became available, this first spray has become more and more important. Also, the application of early scab sprays is often slowed up because the sprayer gets stuck in the mud."

"What is the answer? Four things will help:

1. Keep apple orchards in sod.

2. Drain wet spots.
3. Have sprayer on wheels of sufficient size and number so that the sprayer will cut in less.
4. Have power that will give the traction necessary.

"On the last two points, we need a lot more research, as indicated by the questions raised later.

"Sod culture is not only better for applying the early sprays, but is also better for obtaining high color on red varieties. In fact, sod is essential to grow good McIntosh.

"Draining wet spots may be done with open ditches or with tile. If the land is springy, tile is probably more satisfactory if an outlet can be obtained. Tiling is expensive and is justified only where small areas need it. Tile drained land costs more and is worth less than land with good natural drainage.

"The number and size of wheels on the sprayer is the most important factor in how often one will get stuck. Of course, we know that larger tires and dual wheels will help. But how important are they in reducing the draft? We need our Rural Engineering Department of our State College to make a number of tests in the early spring to determine the importance of the following on the frequency with which one will get stuck.

1. Is a two-wheeled rig better than four wheels?
2. What proportion of weight should be carried on the tractor, with two wheels, and the proportion on the front wheels with a four-wheeled rig?
3. How much will dual wheels help?
4. How important is the size of the tires?

"What is the most economical source of power for these early sprays? Some growers are buying caterpillar tractors. Is this the answer? Or with properly designed sprayers, can our wheeled tractors be used? Some questions are:

1. Comparison of the drawbar pull of tractors with steel wheels and tractors with rubber tires, with and without chains.
2. Effect of extension rims on steel wheels.
3. Comparison of sand lugs and ordinary lugs.

What do you think about getting a number of different sprayers and tractors together next March and obtaining the answers to these questions? This may be a good job for our district engineers, and perhaps we could have one test in each fruit county. Perhaps you have had experience with more than one sprayer or tractor, or have an outfit that will go almost anywhere. If so, write us about your experiences, so we can pass it along to other growers."

Reading Nature To Our Advantage

The orchardist who observes nature closely will gain a wealth of original information and have the quiet satisfaction of "knowing," which comes in no other way. Nature may be beautiful to look upon or she may give witness to the all-out tragedy which comes from the old, old process of "survival of the fittest." And there is everything between these extremes. No wonder John Muir, swaying in the top of a tree during a storm to see what it would be like, or Bentley of Vermont making the first photomicrograph of snow crystals, excite our own nature-lust.

But to come down to earth, let us note the growth conditions or status of plants as it affects their health or well being. Unless we know what is "normal" we cannot recognize the abnormal.

The now classic work of Kraus and Kraybill demonstrated that there are certain chemical balances which are brought about particularly by the nitrogen - carbohydrate relationships within the plant. They called attention to four such categories. On the one hand there is a succulent, non-bearing plant (the so-called overvegetative) and on the extreme opposite there is a woody, non-bearing one. Somewhere between these, the plant makes a satisfactory growth, blossoms freely, and sets fruit well. It is the aim of the plantman to know where this optimum condition is and then how to attain it.

But that is not all. An overvegetative plant is subject to certain ills and, conversely, the high carbohydrate-low nitrogen plant falls heir to other types of trouble. In the former class would be found an overvegetative apple tree which lacks maturity or is over vegetative, which is more subject to blight than a high carbohydrate one. This year we saw a block of Stayman Winesap apple trees which had been treated with three times the usual amount of nitrogen and also heavily mulched. In comparison with their companion trees which had the usual treatments, these trees were injured by spraying which did not affect the "normal" trees, and they had a much higher infection from apple scab. It was clearly the growth status of these trees, together with a season of wet, cool weather that brought about these conditions.

On the other hand, stunted or low-vigor trees are more susceptible to borers and certain other troubles.

The true naturalist will come to see these things as he walks about his plantation, that is, "finds books in the running brooks."



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A FRUITONE treatment costs about 1c a bushel, but *more* apples come to full maturity, size, and color. Fruitone holds the fruit on the trees so the sun can finish its job.

Pick quality fruit from the tree, not bruised fruit off the ground. For best results, it is important to spray the trees at the right moment. Write today for our maturity schedule.

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